SUMMIT COUNTY AMBULANCE SERVICE

ADULT RAPID SEQUENCE INTUBATION PROTOCOLS

Version 1.0

THESE PROTOCOLS ARE EFFECTIVE MARCH 19, 2014

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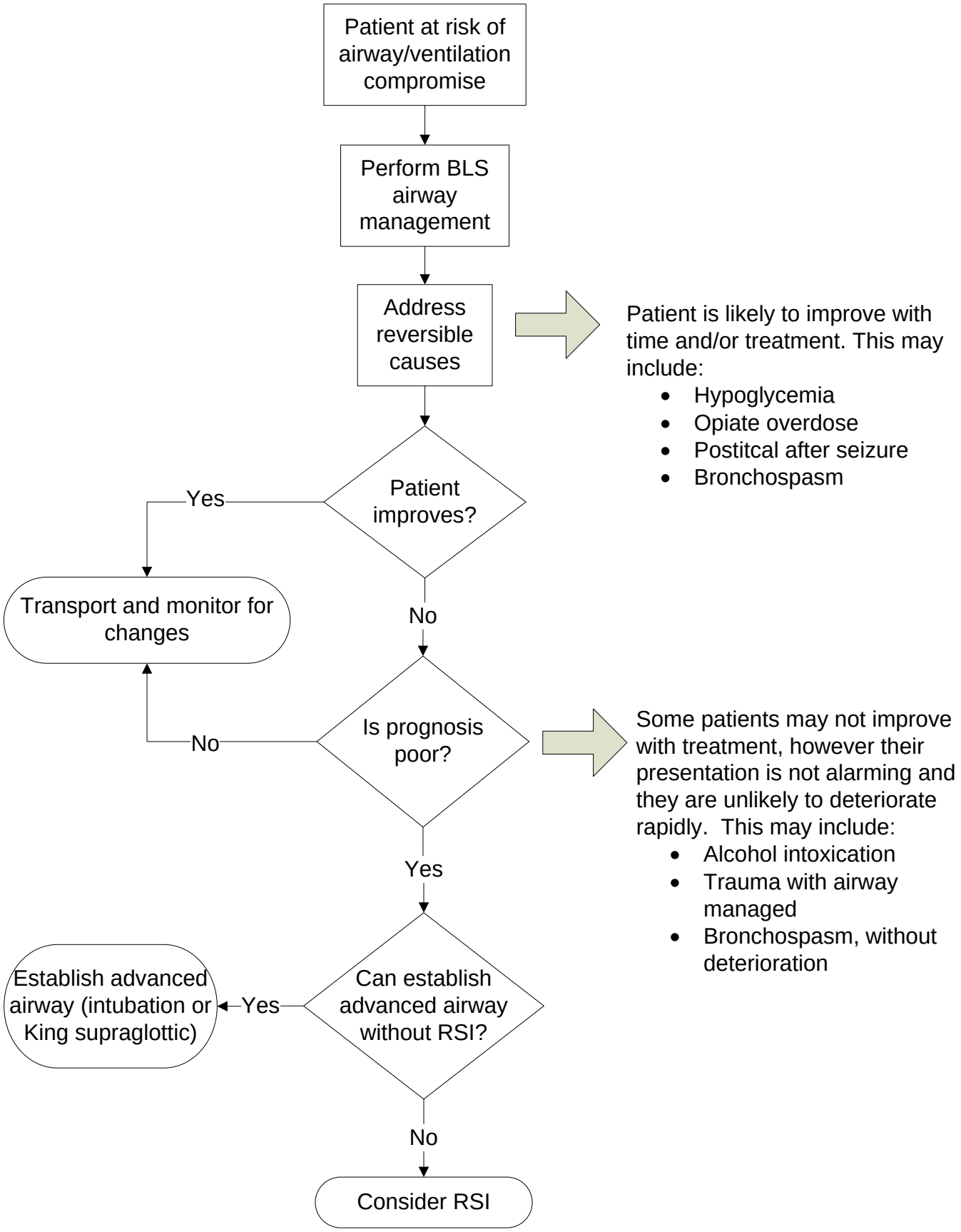
1010 WHEN TO CONSIDER RAPID SEQUENCE INTUBATION



1020 ADULT RAPID SEQUENCE INTUBATION

Adult Rapid Sequence Intubation	B	IV	I	P	Adv
Standing order					X
Second attendant				X	X

General Information

A. RSI is meant to facilitate orotracheal intubation of patients requiring immediate control of their airway when other methods of airway control are either inappropriate or less advantageous.
B. Considerations for RSI include any patient that suffers a threatened airway, requires ventilatory assistance, or is at imminent risk of suffering airway or ventilatory compromise.
C. RSI is the tool of choice (when no contraindications exist) for airway management of non-obtunded patients with a gag reflex and patients suffering from trismus.

Indications:

A. Patient must be ≥ 13 years old or longer than the Broselow-Luten tape
B. GCS ≤ 9 with intact gag reflex and potential for airway compromise
C. Combative patient with clear need for intubation (inability to maintain airway or ventilate by any other method)
D. Trismus/clenched jaw
E. Respiratory failure or insufficiency
F. Airway injury (swelling or obstruction)

Contraindications:

A. Known hypersensitivity to any medications used for RSI
B. Patients that can be orally intubated without the use of RSI
C. Patients that cannot be adequately ventilated with bag-valve mask
D. Patients considered difficult laryngoscopy/intubation candidates
E. Hyperkalemia
    1. Succinylcholine should be administered with GREAT CAUTION to patients with hyperkalemia because in these patients succinylcholine may induce serious cardiac arrhythmias or cardiac arrest.

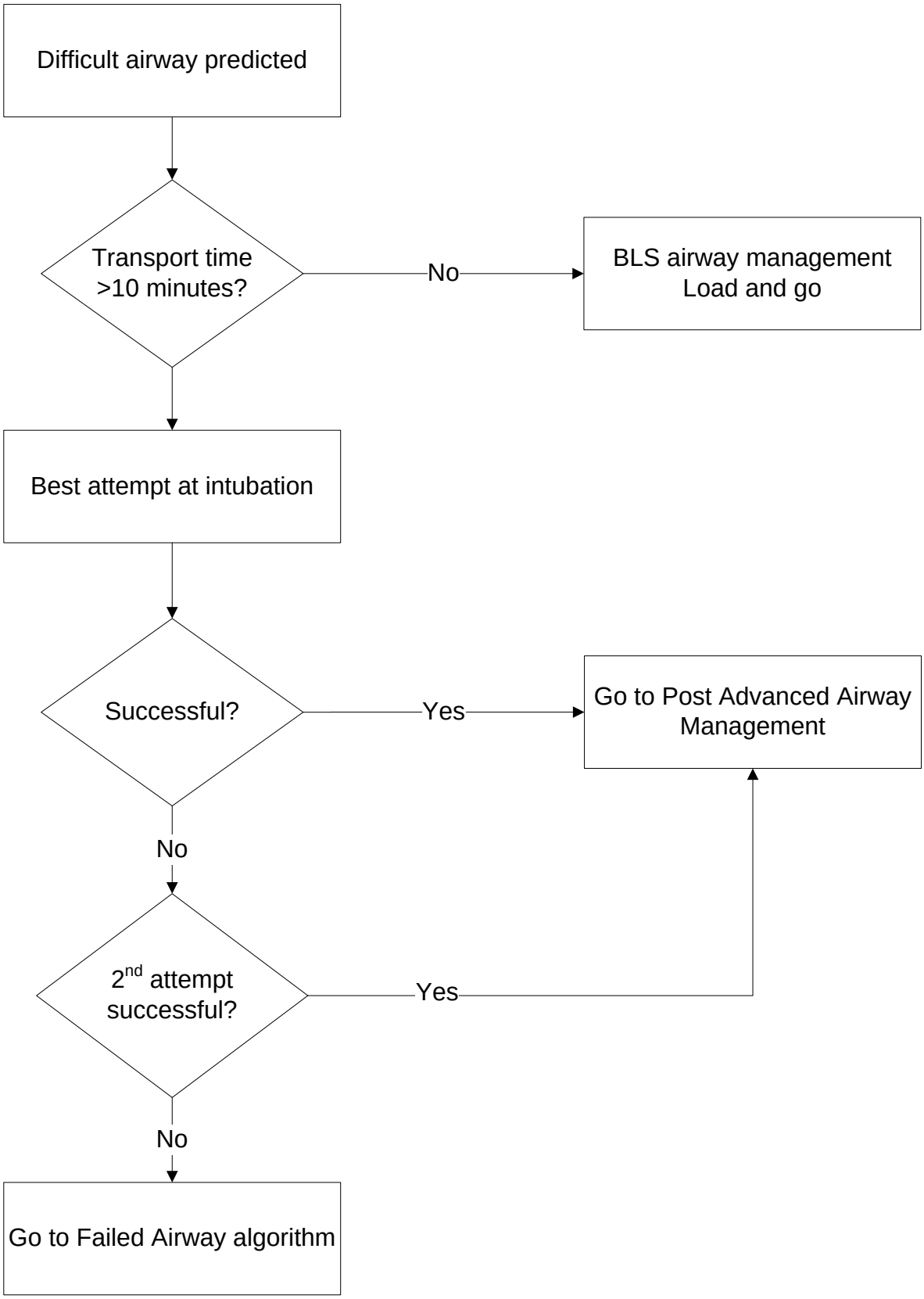
Technique:

A. Confident you will be able to manage patient's airway with BVM
B. Confident you will be able to perform laryngoscopy and intubate this patient
C. Check blood sugar
D. Apply monitors (continuous ECG, HR, BP, SaO_2, $ETCO_2$)
    1. Obtain complete set of vital signs
    2. Continuous monitoring with waveform $ETCO_2$ capnography is mandatory during RSI
E. Pre-oxygenate with 100% oxygen for approximately 3 minutes or 8 vital capacity breaths with BVM or NRB
F. Ensure patent vascular access (2 IV or IO preferred)
G. Prepare and test equipment:
    1. BVM with high flow O2
    2. Suction on and working
    3. King Vision laryngoscope on and working
    4. ETT balloon tested
    5. If using non-channeled blade, ETT placed on rigid stylet
    6. Airway adjuncts (e.g. Bougie) available
    7. Tube securing device ready
    8. Rescue device immediately available
    9. Cricothyrotomy equipment immediately available
H. Prepare / draw up amount to be administered / label medications
    1. Verify medications at least 3 times before administration (5 Patient Rights)
I. **Thoughtful pause – Complete Pre-RSI checklist**
J. Administer ketamine
K. Administer succinylcholine
L. Perform endotracheal intubation
    1. ***LIMIT ATTEMPTS TO 30 SECONDS OR DROP IN SPO_2 <90%*** – oxygenate with BVM for 60 seconds between attempts
    2. ***NO MORE THEN 2 ATTEMPTS*** – move on to rescue airway
M. Confirm tube placement
N. Restrain patient's arms and legs to prevent extubation
O. Prevent excessive movement of head (consider LSB and c-collar)
P. Go to Post Rapid Sequence Intubation Management Protocol

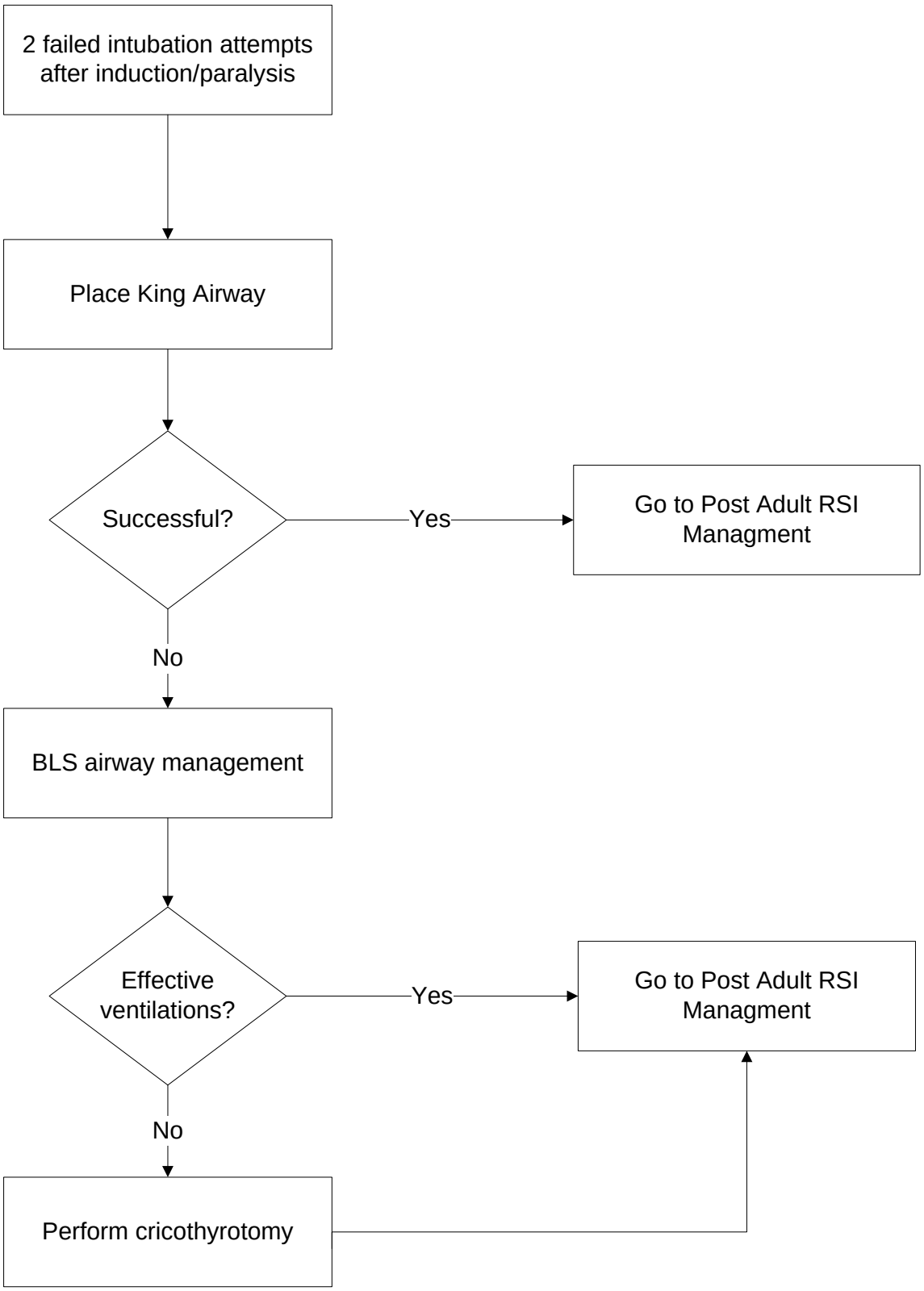
Special Notes

A. Required notification after procedure is performed:
    1. Clinical Practice Supervisor and AOC – Immediately after completion of the call
    2. Medical Director – Within 24 hours after completion of the call
    3. Colorado Department of Public Health and Environment Emergency Medical and Trauma Section – Colorado EMS RSI Case Report submitted within 7 days

1030 DIFFICULT AIRWAY



1040 FAILED AIRWAY



1050 POST ADULT RAPID SEQUENCE INTUBATION MANAGEMENT

Post Adult Rapid Sequence Intubation Management	B	IV	I	P	Adv
Standing order					X
Second attendant				X	X

Tube Placement Confirmation

A. Utilize all the following to confirm placement (both endotracheal intubation and King airway):
   1. For endotracheal intubation, visualizing the endotracheal tube passing through the cords
   2. Continuous end tidal CO2 waveform capnography – square waveform that exists for 6 breaths
   3. Auscultation over both lungs and epigastrium
   4. Visible chest rise and fall

B. Re-confirm at the following intervals:
   1. Whenever the patient is moved
   2. With the transfer of care at the receiving facility

Patient Monitoring

A. Continue patient monitoring
   1. Continuous ECG
   2. Heart rate
   3. Blood pressure
   4. Continuous pulse oximetry
   5. Continuous end tidal CO_2 capnography

B. Continuous monitoring with end tidal CO_2 waveform capnography monitoring is mandatory

Maintenance of Sedation and Analgesia

A. Consider ketamine
   1. Administer 10 minutes after successful RSI and first administration of induction dose
   2. Dose
      a. Refer to ketamine protocol for dosing

B. Consider Versed (midazolam)
   1. After successful RSI and ketamine induction administration
   2. Contraindication
      a. Hypotension
   3. Dose
      a. 2 mg IV up to 2 times

Maintenance of Paralytic

A. Vecuronium bromide
   1. Consider maintenance paralytic if time between RSI and arrival at the hospital will be longer than 10 minutes
   2. Concentration
      a. 10 mg/10 ml (1 mg/ml)
   3. Dose
      a. 0.1 mg/kg IV

1060 POTENTIAL ADVERSE EVENT MANAGEMENT

Hypotension

A. Hypotension is common in the post intubation period and is often caused by diminished venous blood return as a result of the increased intrathoracic pressure that accompanies positive pressure ventilation or exacerbation of the hemodynamic effects some induction agents
B. Usually self-limiting; treat with IV fluids

Bradycardia

A. Verify hypoxia is not the cause of the bradycardia
B. Consider atropine 0.5 mg IV
    1. Profound bradycardia and cardiac arrest can occur during intubation of critically ill patients
    2. Atropine should be readily available when intubating

Hypertension

A. Do not attempt to treat in the field; transport patient

Tachycardia

A. Do not treat in the field; transport patient

1070 DETERMINING DIFFICULT BAG/MASK VENTILATIONS (MOANS)

General Information

A. When performing rapid sequence intubation you must be confident that you can ventilate the patient with a bag-valve mask

Indicators of Difficult Bag/Mask Ventilations (mnemonic MOANS)[1]

MOANS	
Mask Seal	Bushy beards, crusted blood on face, facial trauma
Obesity/ **O**bstruction	Pregnant patients in 3rd trimester, airway edema, foreign body
Age	>55 years old
No teeth	Consider leaving dentures in for bag-valve mask ventilations, remove for intubation
Stiff Lungs	Asthma, COPD, ARDS, pulmonary edema, advanced pneumonia, reduced pulmonary compliance

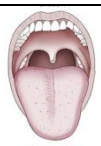
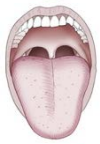
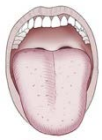
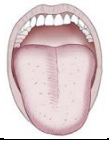
[1] (Walls)

1080 DETERMINING DIFFICULT LARYNGOSCOPY/INTUBATION (LEMON)

General Information

A. Difficult laryngoscopy and intubation generally implies you will have a poor view of the trachea and the vocal cords
B. The following is to quickly identify patients who might be difficult to visualize with laryngoscopy or intubate

Indicators of Difficult Laryngoscopy/Intubation (mnemonic LEMON)[2]

A difficult airway is a LEMON	
Look Externally	Evidence of lower facial disruption that make intubation and bag-valve mask ventilations difficult
Evaluate 3-3-2	• Mouth opening – 3 patient fingers • Mandibular space (mentum and hyoid bone) – 3 patient fingers • Larynx in relation to base of tongue (notch of thyroid cartilage) – 2 patient fingers
Mallampati score	 Class I – Soft palate, uvula, fauces, pillars visible  Class II – Soft palate, uvula, fauces visible  Class III – Soft palate and base of uvula visible  Class IV – Only hard palate visible
Obstruction	Three signs of upper airway obstruction: • Muffled voice (hot potato voice) • Difficulty swallowing secretions • Stridor
Neck mobility	• Cervical spine immobilization • Intrinsic cervical spine immobility (e.g. ankylosing spondylitis, rheumatoid arthritis, etc.)

[2] (Walls)

1090 KETAMINE

Ketamine	B	IV	I	P	Adv
RSI induction agent – Standing Order					X
RSI analgesic/sedation agent – Standing Order					X

Protocol written solely for RSI: ***Refer to Denver Metropolitan Prehospital Protocols – St. Anthony Prehospital Mountain Protocol Set for indications, dosages, and administration routes other than RSI.***

Action

A. Ketamine is a dissociative anesthetic agent, structurally similar to phencyclidine (PCP). It is unique among sedative agents in that it provides analgesia along with amnestic and sedative effects
B. Onset of action
    1. Time to effect – 45 to 60 seconds
    2. Duration of action – 10 to 20 minutes

Indications

A. Induction agent for rapid sequence intubation
B. Analgesic and sedation agent for rapid sequence intubation

Contraindications

A. Known hypersensitivity to the drug
B. Penetrating eye trauma is a relative contraindication

Precautions

A. Caution should be used in the hypertensive patient
B. Caution should be used in the patient with existing tachyarrhythmias

Complications

A. Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress
B. Emergence reaction: presents as anxiety, agitation, apparent hallucinations or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepine
C. Nausea and Vomiting: always have suction available after ketamine administration.
D. Hypersalivation: Suction usually sufficient. If profound hypersalivation causing airway difficulty, administer atropine 0.5 mg IV

Procedure

A. Concentration
    1. 500 mg/10 ml (50 mg/ml)
B. Dose
    1. 2 mg/kg
    2. Consider administration every 10 minutes after successful RSI and first administration of induction dose

Drug Label Insert Link

Ketamine Hydrochloride injection

1100 ANECTINE (SUCCINYCHOLINE)

Anectine (succinycholine)	B	IV	I	P	Adv
RSI paralytic agent – Standing Order					X

Action

A. Succinylcholine is a depolarizing skeletal muscle relaxant. It combines with the cholinergic receptors of the motor end plate to produce depolarization. This depolarization may be observed as fasciculations. Subsequent neuromuscular transmission is inhibited so long as adequate concentration of succinylcholine remains at the receptor site.
B. Onset/Duration
    1. Onset of flaccid paralysis less than 1 minute
    2. Lasts approximately 4 to 6 minutes

Indications

A. Paralytic agent for rapid sequence intubation

Contraindications

A. Absolute contraindications
    1. Known hypersensitivity to the drug
    2. Personal or familial history of malignant hyperthermia
    3. Known hyperkalemia
B. Relative contraindications
    1. Burns >5 days old until healed
    2. Muscle damage (crush injury) >5 days until muscle completely healed
    3. Spinal cord injury or stroke >5 days until 6 months post
    4. Intra-abdominal sepsis >5 days until resolution of infection
    5. Skeletal muscle myopathies
        a. Skeletal muscle myopathies represent a large group of diseases that result in weakness of the skeletal muscles; many result in the degeneration of skeletal muscle fibers. Examples include muscular dystrophies, amyotrophic lateral sclerosis (ALS), and myasthenia gravis
        b. Generally associated with disease names that may include these words myopathy, dystrophy, myositis, myotonia (ic), sclerosis

Complications/Side Effects

A. Has no effect on consciousness or pain
B. Apnea
C. Malignant hyperthermia
D. Hyperkalemia
E. Muscle fasciculation (normal and do not require treatment)
F. The following additional adverse reactions have been reported: cardiac arrest, arrhythmias, bradycardia, tachycardia, hypertension, hypotension, prolonged respiratory depression or apnea, increased intraocular pressure, jaw rigidity, rhabdomyolysis with possible myoglobinuric acute renal failure, excessive salivation, and rash

Procedure

A. Concentration
    1. 200 mg/10 ml (20 mg/ml)
B. Dose
    1. 2 mg/kg

Drug Label Insert

ANECTINE (succinylcholine chloride) injection, solution

1110 RSI CHECKLIST AND DOSING CARD

PRE-RSI Checklist

- ☐ Pre-oxygenate – NRB or BVM 3 min.
- ☐ MOANS / LEMON / REVERSIBLE CAUSE?
- ☐ Attach Monitoring Equipment: SpO2, ECG, EtCO2, NIBP
- ☐ Airway Equipment: BVM, Suction, Scope, ETT, O2, King Airway, Cric Kit
- ☐ Plan / Position / Evaluate Patient **NO CONTRAINDICATIONS?**
- ☐ Pre-medicate with Ketamine – THEN – Paralyze with Succinycholine

lbs	100	125	150	175	200	225	250
Ketamine Dose 2 mg/kg Conc 50 mg/ml	2 ml 100mg	2.5 ml 125mg	3 ml 150mg	3.5 ml 175mg	4 ml 200mg	4.5 ml 225mg	5 ml 250mg
Succinycholine Dose 2 mg/kg Conc 20 mg/ml	5 ml 100mg	6 ml 120mg	7 ml 140mg	8 ml 160mg	9 ml 180mg	10 ml 200mg	11 ml 220mg

POST-RSI Checklist

- ☐ Confirm Placement
- ☐ Continuous EtCO2
- ☐ Maintain sedation / paralysis

lbs	100	125	150	175	200	225	250
Ketamine Dose 2 mg/kg Conc 50 mg/ml	2 ml 100mg	2.5 ml 125mg	3 ml 150mg	3.5 ml 175mg	4 ml 200mg	4.5 ml 225mg	5 ml 250mg
Vecuronium Dose 0.1 mg/kg Conc 1 mg/ml	5 ml 5 mg	6 ml 6 mg	7 ml 7 mg	8 ml 8 mg	9 ml 9 mg	10 ml 10 mg	11 ml 11 mg

SUMMIT COUNTY AMBULANCE SERVICE

CLINICAL PROTOCOLS FOR INTERFACILITY TRANSPORT

Version 2.2.1

These protocols are effective September 1, 2013

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PROTOCOL VERSIONING SCHEME

Protocol Versions

A. All further revisions will be numbered in the x.y.z scheme as follows:
   1. A change to the number in position x reflects significant changes to the protocols, including:
      a. A complete review and revision of the protocols
      b. Major additions to the protocols
      c. Any other change determined to be sufficiently significant in nature as to necessitate a whole number change in protocol version number.
   2. A change to the number in position y reflects a minor change to the protocols, including:
      a. Addition or deletion of protocols
      b. Changes to the wording or content of individual protocols, such as a change in drug dosages
      c. Any other change determined to be greater in scope than a z number change, but lesser than an x number change
   3. A change to the number in position z reflects a very minor change, including:
      a. Fixed grammatical errors
      b. Changed page numbering
      c. Any other change determined to be insignificant to the meaning or usage of the protocols

Historical tracking of protocol changes

A. Each protocol version, including any changes in z numbering will be saved as a locked, protected document.
B. An accompanying master protocol changes list will be kept. This list will detail what changes were made in each revision number change.

1000 INTRODUCTION

The following protocols define the rules of medical care for Summit County Ambulance Service EMS providers during interfacility transport; for prehospital treatment refer to the Denver Metro Protocols. These protocols delineate the expected practice, actions and procedures of EMS providers during interfacility transport. When protocol variance occurs it should be approached in a logical and knowledgeable manner, done in the best interests of the patient, and well documented. In essence, it should be done "in good faith." Deviation from the protocols is occasionally necessary due to the vast array of complex clinical presentations. It should always be done with the patient's best interest in mind and backed with documentation and defendable clinical reasoning and judgment. Deviations will be reviewed by the Medical Director and in the CQI process and require the completion an incident report. Please remember that protocols define process; people provide care. In the protocols, there are Acts Allowed Tables. An "X" in the box below the provider level indicates this is an act allowed by the Medical Director. The following is an example of the table:

Acts Allowed Table	B	IV	I	P	Adv
Treatment, medication, or procedure listed here	X	X	X	X	X

1010 TRANSFER ORDERS

The goal is to continue care based on the physician's assessment. To accomplish this, the sending physician needs to provide clear and concise orders that provide guidance and restrictions. In addition, interfacility transports are governed by EMTALA (Emergency Medical Treatment & Active Labor Act); the following information provides guidance to abide by this law.

The Basics of Transfer Orders

Physician transfer orders provide guidance on:

A. Maintaining, initiating, and discontinuing treatments
B. Patient monitoring during transport (e.g. ECG, continuous pulse oximetry)

Transfer orders must be completed and signed by a physician. The physician is also responsible for making any edits to the transfer orders.

A nurse may not provide or edit orders without physician review and approval.

A nurse practitioner or physician's assistant can provide transfer orders. These orders should be reviewed by a physician (document if orders were reviewed verbally).

Level of care to be provided

If the sending physician approves of an EMT-Basic or Intermediate attending, it must be written on the orders (ex. EMT-Basic may attend). The physician must cross out and initial any orders that are out of the scope of the attending provider's protocols.

Review Transfer Orders

Review transfer orders prior to leaving the sending medical facility. If the physician has not provided clear and concise orders, ask him/her to clarify.

There are circumstances where the physician can only provide verbal changes to the written orders. Verify the verbal orders by repeating them back to the sending physician and document them as "verbal orders" in the PCR narrative.

Medications

Medication orders must include the following

A. Name of the medication
B. Route of administration
C. Dose to be administered (including dosing units)
D. Approved time intervals for administration, if applicable
E. Indication for administration (ex. Fentanyl for pain, Valium for muscle spasms)
F. Parameters for administration (e.g. maintain blood pressure above 100 mmHg systolic, maintain oxygen saturation greater than 90%)
G. Guidance on infusion maintenance
    1. If titratable, parameters for titration
    2. If infusion to be finished while en-route, is there any specific actions required after completion

Procedure Maintenance

Physicians need to provide written guidance for the maintenance or monitoring of procedures initiated at the sending facility (e.g. continuous, intermittent, or no suction for a nasogastric tube).

Changing Orders En-route

Sometimes, unforeseen circumstances occur requiring a change in transfer orders. Try to contact the sending physician first. If the sending physician is not available, contact medical control for orders.

1020 PATIENT MONITORED THERAPIES

Some medications, nutrition systems, and medical devices, both prehospital and interfacility, can be transported even though we do not have training, experience, or a protocol to monitor, adjust, or discontinue. These medications and medical devices are things a patient, with minimal instruction from a healthcare provider, can self monitor at home.

911 Calls

If a medication, nutrition system, or medical device is encountered during a 911-call, transport remembering you are not responsible to manage, alter, or discontinue these items.

For any problems with a patient monitored medication or device follow these steps:

A. Talk to the patient and/or caregiver about what is occurring with the medication or device.
B. Review therapy information, if available. Most of these products have information cards with the therapy/device.
C. Contact Medical Control for orders before altering or discontinuing the therapy/device.

Inter-facility Transport

If a medication, nutrition system, or a medical device in a healthcare facility (hospital, clinic, etc.) is a therapy that may be monitored by the patient or a caretaker (someone who is not a healthcare provider), talk to the sending physician and verify the patient or a caretaker could monitor the therapy outside of a healthcare facility. Contact Medical Control for orders before altering or discontinuing the therapy/device.

Level of Attendant

For 911 calls, if a patient monitored medication or device is managed daily by the patient, family member or aid it may be appropriate for a BLS attendant. If a physician or nurse must monitor/adjust the medication or device daily it is an ALS call. Remember, it is always better to be cautious and defer to the higher-level of care.

For interfacility transports, it is up to the sending physician to determine what level of care is needed. The sending physician must document the level of provider on the transfer orders.

2000 INTERFACILITY PROCEDURES

2010 URINARY CATHETER MONITORING

Urinary Catheter Monitoring	B	IV	I	P	Adv
Interfacility Transport – Standing order	X	X	X	X	X

Description

A. For the monitoring of a urinary catheter that is inserted prior to arrival of a physician ordered interfacility transport
B. Types of urinary catheters:
    1. Foley catheter - soft tube inserted into the bladder through the urethra with a balloon near the end which is filled with sterile water inside the bladder to keep the catheter in place
    2. Suprapubic catheter – catheter inserted through the abdominal wall by a physician when a catheter cannot be inserted through the urethra

Indications

A. The indication for use is determined by the sending physician and may include:
    1. Temporary management of a dysfunctional bladder
    2. Postoperative care
    3. Accurate measurement of urinary output
    4. For spinal column/cord injury, or the inability to rule it out, prior at sending facility

Procedure

A. Verify sending nurse catheter is patent and secured, obtain a copy of the nurses documentation and document the size and type of catheter used
B. Measure and document urinary output, urine color, and if urine is cloudy/malodorous prior to transport
C. Assess for:
    1. Bladder distention
    2. Leakage of urine around the catheter
    3. Pain and bladder spasms
    4. Hematuria and bleeding around catheter
D. After patient is transferred to ambulance, place the drainage bag below the level of the patient's bladder and correct any kinking of the drainage tubing
E. While en-route, assess for continued output and any complications
    1. Adequate urine output
        a. Adult ≈ 30mL/hour
        b. Pediatric ≈ 1-2mL/kg/hour
F. Upon arrival at receiving facility measure and document the urinary output and any changes in urine color and if urine is cloudy/malodorous

Complications

A. Occlusion of the catheter by clot, tissue, or mucous
B. Some people have discomfort from the catheter being in the urethra or experience bladder spasms; have the sending facility treat the discomfort (e.g., medication, insertion of a smaller catheter) prior to departure
C. Dislodgement of the catheter can cause bleeding and trauma to the urethra, notify the receiving facility if this occurs
D. Catheterization can be a major cause of urinary tract infection

2020 GASTRIC TUBE MAINTANENCE

Gastric Tube Maintenance	B	IV	I	P	Adv
Interfacility Transport – Written physician order				X	X

Indication

A. To maintain and use an established nasogastric or orogastric tube during transport

Procedure

A. Disconnect patient from suction
B. Assure patency and placement of tube by instilling at least 30mL of air into the tube while auscultation with a stethoscope over the stomach
C. Confirm tube is secured to the patient before moving
D. Follow the sending physician orders:
    1. Low continuous suction (20mmHg or less)
    2. With Levine tube, or if continuous suction is not required, place a 60mL Toomey syringe on the outlet, aspirate for air and gastric contents every 10 minutes, and document any changes.
E. Restrain patient's hands if you anticipate any problems with the patient pulling the tube
F. Document description and amount of output before and after the transport

Complications

A. In the event the tube becomes dislodged or removed during transport, document the time and integrity of the tube and notify the receiving facility

2030 CENTRAL VENOUS CATHETER MAINTANENCE

Central Venous Catheter Maintenance	B	IV	I	P	Adv
Interfacility Transport – Written physician order			X	X	X

Purpose

A. Maintain catheter patency
B. Administration of IV fluids, medications, and blood products through central venous catheters

Procedure

A. Complete the central venous catheter section of the Summit County Ambulance Critical Care Transport Checklist prior to departure
B. Have sending physician or nurse initial each of these items on the checklist prior to departure:
    1. Catheter placement is confirmed by x-ray or documented physician statement
    2. Catheter secured with tape and suture
    3. Insertion site is covered with sterile dressing
    4. All lines and ports not in use are clamped and locked

Complications

A. In the event the catheter becomes dislodged or severed during transport, immediately stop all infusions and place a soft clamp between the damaged portion of the catheter and patient. Notify receiving facility.
B. Should the catheter become completely dislodged during transport apply pressure to the insertion site and maintain seal with Vaseline gauze or tape and sterile dressing. Save the catheter and notify the receiving facility.
C. If the flow to the infusion(s) becomes positional or stops double check the equipment, attempt to reposition the patient, and notify the receiving facility.

2040 CHEST TUBE MAINTENANCE

Chest Tube Maintenance	B	IV	I	P	Adv
Interfacility Transport – Written physician order				X	X

Purpose

A. Maintaining chest tube patency
B. Maintaining chest tube drainage systems

Procedures

A. Complete the chest tube maintenance section of the Summit County Ambulance Critical Care Transport Checklist prior to departure
B. Ensure the tube has been secured with suture and tape
C. Maintain chest tube patency
    1. Auscultate breath sounds every 15 minutes during transport
    2. Keep all equipment and tubes below the level of the patient's chest in order to prevent reflux of drainage into the pleural cavity
    3. Keep all tubing straight and free of kinks
    4. Monitor continuous pulse oximetry and end tidal CO2 capnography during transport
D. Maintenance of drainage systems
    1. Pleur-Evac system:
        a. A system with three separate color coded chambers:
            i. White for drainage collection
            ii. Red for providing a water seal
            iii. Blue for providing suction control
        b. Directions for device specific trouble shooting are written on the system
    2. Thora-Klex:
        a. A waterless system which utilizes a one-way valve instead of water
        b. Directions for device specific trouble shooting are written on the instruction card located on the front of the system
    3. HeimLich Valve:
        a. A single system tube that acts as a one-way flutter valve
        b. Used primarily for non-draining chest tubes
        c. Assure the valve is well secured to the chest tube prior to departure

Complications

A. Observe for any signs of hemorrhage, respiratory distress, or subcutaneous emphysema and treat accordingly
B. If patient shows signs of rapid decompensation (i.e. dyspnea, cyanosis, tachypnea, or deviated trachea) listen to breath sounds, evaluate for possible problems with the system, and consider needle thoracostomy
C. If chest tube is accidentally removed cover the insertion site with gauze secured as a three-sided dressing, if immediately available use Vaseline gauze (and always watch for potential tension pneumothorax)
D. Notify the receiving facility with any interfacility issues.

2050 MECHANICAL VENTILATION – LTV 1200

Mechanical Ventilation Utilizing LTV 1200	B	IV	I	P	Adv
Inter-facility transport – Written physician order					X
Second attendant	X	X	X	X	X

Indications

A. Physician evaluated patients requiring mechanical ventilation during interfacility transport through a secured advanced airway with physician confirmation of correct placement. Advanced airways include:
   1. Orotracheal intubation
   2. Nasotracheal intubation
   3. King airway
   4. Cricothyrotomy
   5. Tracheostomy

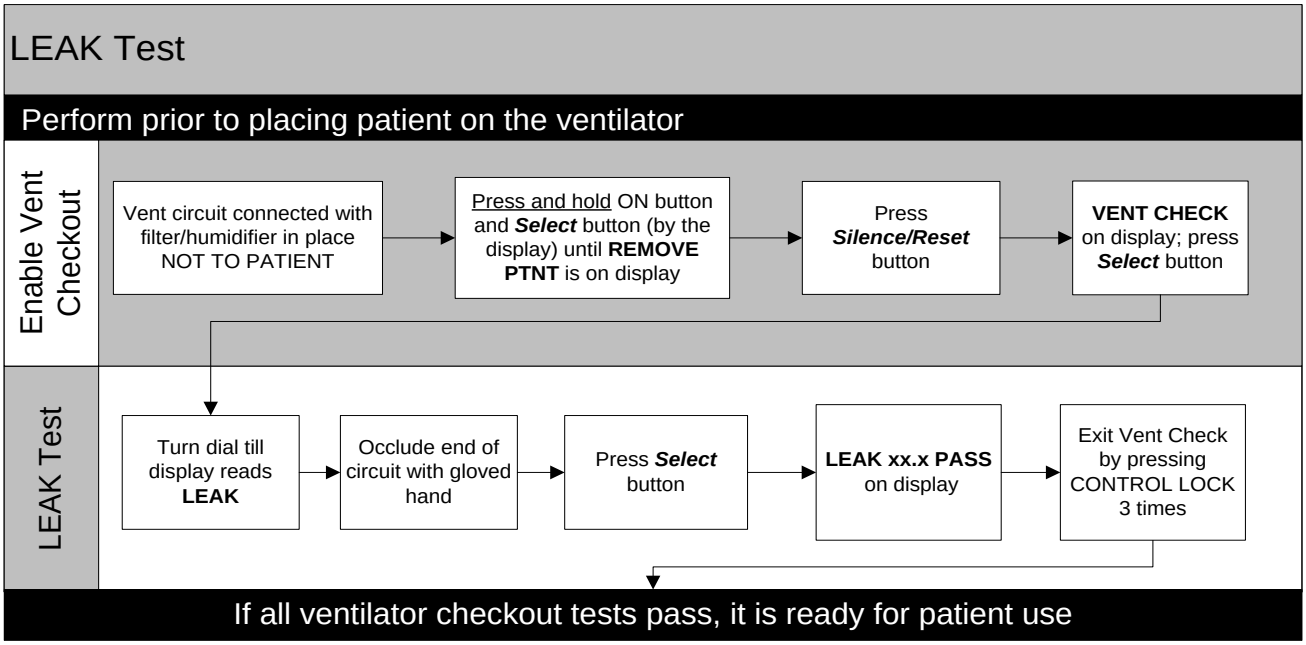
Contraindications

A. Patients ≤ 20 kg
B. Patients requiring >10 cmH20 of PEEP

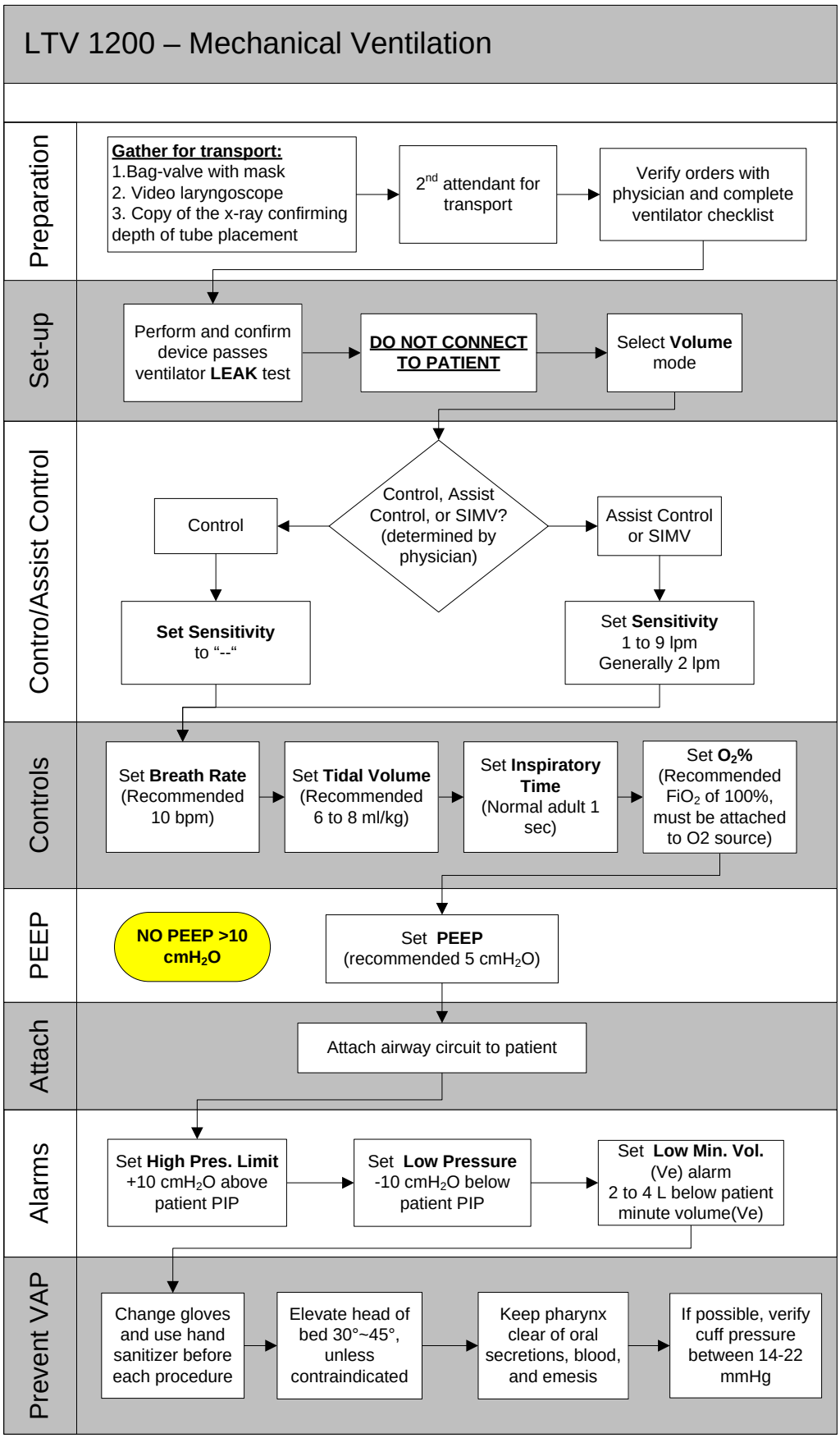
Precautions

A. Have a bag-valve with the mask readily available in case the ventilator fails or the tube becomes dislodged
B. If complications arise, remember the mnemonic **DOPE:**
   1. Dislodged tube
   2. Obstructed tube
   3. Pneumothorax
   4. Equipment
C. Watch for signs of under-sedation or trended increases, such as:
   1. Tachycardia
   2. Hypertension
   3. Lacrimation
   4. Diaphoresis
D. Transport a video laryngoscope (King or Glidescope) with the patient for confirmation of tube placement
E. Ventilator settings and circuit patency should be confirmed with any change in patient status
F. Tidal volume increases when rising in elevation and decreases when going lower in elevation which can cause the delivered tidal volume of the ventilator to be inaccurate; consider this if the patient's condition changes during the transport with an elevation change
G. Follow recommended steps for preventing ventilator-associated pneumonia (VAP)
H. If the patient requires extubation:
   1. Prepare equipment to ventilate patient
   2. Suction secretions from the pharynx and around the cuff
   3. Deflate the cuff
   4. Hold cricoid pressure while pulling the tube out
   5. Maintain ventilation and oxygenation

Test Prior to Patient Use



Technique – Mechanical ventilation



VAP = Ventilator Associated Pneumonia

Paralytic, Sedation, and Analgesia

Follow sending physician orders. The following are approved medications.

Paralytic

Vecuronium Bromide – 0.06mg/kg for patients over 11 years old, given within 25 to 30 minutes of the previous dose

Sedation

Diprivan – Infusion at 5 to 100 mcg/kg/min

Diazepam – 5 mg IV/IO every 25-30 minutes or with signs of undersedation

Midazolam – 0.03 mg/kg IV/IO every 20 minutes or with signs of undersedation

Analgesia

Morphine Sulfate – 0.1mg/kg up to 10mg every 25 to 30 minutes

Fentanyl – 1-2 mcg/kg up to 100 mcg every 25 to 30 minutes

Ventilation Modes:

All deliver a set tidal volume

Control – Does not allow patient to take a breath

Assist Control – Allows patient to take a breath delivering the set tidal volume

SIMV (Synchronized Intermittent Mechanical Ventilation) – Allows patient to take a breath but does not deliver the set tidal volume

Ideal Body Weight (in kg):

Male –
2.3 X (height in inches – 60) Then + 50

Female –
2.3 X (height in inches – 60) Then + 45.5

2060 THERAPEUTIC INDUCED HYPOTHERMIA – CONTINUATION OF INDUCTION AND MAINTENANCE

Therapeutic Induced Hypothermia – Continuation of Induction/Maintenance	B	IV	I	P	Adv
Inter-facility transport - Written physician order					X
Second attendant	X	X	X	X	X

Indication

A. Physician evaluated patient requiring maintenance of therapeutic induced hypothermia

Technique

A. Target temperature of 32°- 34°C (89°- 93°F); ***remaining within the target temperature range is crucial***
   1. Warming above the target range once it is reached is very detrimental to the patient
   2. Patients cooling to rapidly or lower than the target range run the risk of converting into asystole

Method	Cooling Rate
Chilled NS	-2.5° to -3.5° C/hr
Ice packs	-0.9° to -1°C/hr
Turley pad	-0.9° to -1°C/hr

B. Continuation of induction
   1. Continue induction initiated by sending facility without interrupting the cooling process
   2. Methods for initiating and maintaining induced hypothermia include:
      a. Bolus of chilled normal saline up to 2 L
      b. Ice packs to head, groin, or axillae as needed, avoid direct contact with skin
      c. Turley gel pad placed on patient

C. Maintenance
   1. Apply and remove Turley pad and ice packs from patient's head, groin, or axillae as needed to maintain target temp

D. Temperature monitoring
   1. Continuous monitoring with temperature probe placed by the sending facility
   2. Document temperature every 15 minutes

E. Mechanical ventilation
   1. Maintain $EtCO_2$ between 35 to 45 mmHg
   2. Refer to mechanical ventilation protocol for ventilation settings

F. Medication administration – Follow sending physician orders; the following are recommendations
   1. For shivering and to counter warming
      a. Fentanyl 1 mcg/kg IV every 25-30 min with administration of vecuronium
      b. Vecuronium bromide 0.06 mg/kg IV bolus every 25-30 minutes
   2. Sedation
      a. Diprivan 5-100 mcg/kg/min IV infusion
      b. Midazolam 0.03mg/kg IV as needed every 20 minutes for signs of under-sedation, which may include:
         i. Increase in heart rate
         ii. Increase in blood pressure
         iii. Tearing
         iv. If not paralyzed, extra ventilations triggered from ventilator by patient
   3. To prevent hypotension avoid back-to-back administration of midazolam and fentanyl
   4. Follow recommended medication orders for therapeutic induced hypothermia; these supersede recommended medication orders for mechanical ventilation and can be utilized to maintain analgesia, sedation, and paralysis

G. Notify medical control immediately for any of the following
   1. Heart rate < 50 or > 120 beats per minute
   2. Systolic blood pressure < 80 or > 180 mmHg; or, mean arterial pressure < 65 mmHg
   3. Uncontrolled shivering
   4. Patient awakens and follows commands

3000 INTERFACILITY MEDICATIONS

3010 MEDICATION ADMINISTRATION – SAFETY

Infusion Pump Failure

If an infusion pump fails remember with a 60 drops/mL drip set 1 mL/hr is equivalent to 1 drop/min.

Combined Administration/Procedural Sedation

A. Medications are to be administered for their specific indications; such as fentanyl or morphine for pain and diazepam or versed for muscle spasms
B. Do not administer medications at the same time; allow each medication time for it to have taken effect. Document a patient assessment prior to the next medication administration.

6 Rights of Medication Administration

Right Medication	• Inspect the medication label 3 times – When removing the drug from the bag, as the medication is drawn into the syringe, and immediately before administration • Consider showing or verbalizing the medication to your partner for confirmation
Right Dose	• Most medications administered in the ambulance require opening 1-package • If opening more than 1-package; verify the intended dose, the medication concentration, and all dosing calculations are correct before administration • Consider reviewing the dosage with your partner for confirmation
Right Time	• If administering medications by written order; review the physician orders for the appropriate administration time • In order to maintain the medication's effect, subsequent doses be administered before the effects of the previous dose wear off
Right Route	• Medications may not be absorbed by the body as effectively when administer by the wrong route • A concentration of a medication administered by the wrong route can have serious side effects
Right Patient	• If transporting multiple patients; confirm the physician orders before administration
Right Documentation	• Document treatments provided for the receiving facility • Review transfer orders; ask the sending physician for clarification or additional orders if needed
Confirm each "Right" 3-times before administration of the medication	

3020 MEDICATION ADMINSTRATION – PATIENT CARE REPORT DOCUMENTATION

Vital signs

A. Document every 10-15 minutes
B. In the first and last sets of patient vitals document all of the following:
    1. Systolic blood pressure
    2. Heart rate
    3. Respiratory rate
    4. Oxygen saturation
    5. Glasgow Coma Scale

Medication Documentation

Document the following information for each medication:

A. Medication name/blood product infused
B. Route of administration
C. If applicable, bolus dose administered prior to infusion
D. Drug concentration
E. Infusion rate (e.g. mL/hour, etc.)
F. Dose (e.g. mg, mg/hour, units/hour, etc.)
G. Infusion IV location and size
H. Amount of fluid infused:
    1. Prior to ambulance arrival
    2. During transport
I. Outcome/effects of administration
J. If applicable, time infusion initiated and/or completed

3030 ACTIVASE (ALTEPLASE)

Activase (alteplase)	B	IV	I	P	Adv
Infusion maintenance – Written physician order					X

Action

A. Tissue plasminogen activator (tPA)
B. Administration of thrombolytic agents results in the dissolving of blood clots

Indication

A. Acute myocardial infarction
B. Non-hemorrhagic ischemic stroke patient

Contraindications

A. Previous CVA or intracranial bleed
B. History of coagulopathy or other bleeding disorders
C. Surgery or trauma in previous 2 months
D. GI or GU bleeding in previous 4 weeks
E. Pregnancy or post-partum
F. Uncontrolled hypertension (>200mmHg systolic or >100mmHg diastolic)

Complications

A. A reperfusion arrhythmia per se is not an indication to discontinue the thrombolytic infusion. If the patient becomes symptomatic, treat the reperfusion arrhythmia per protocol and contact medical control
B. Thrombolytic infusion should be discontinued and the medical control notified for any of the following complications:
    1. Bleeding from any site not controlled with direct pressure.
    2. Decreased level of consciousness; complaint of headache, seizure or new neurologic complaint, change, or finding the may suggest intracranial hemorrhage.
    3. GI or GU bleeding
    4. Unexplained hypotension (systolic blood pressure <100mmHg) not readily reversed with a fluid bolus or Trendelenburg position.
    5. When prolonged chest compressions are anticipated.

Procedure

A. Thrombolytic drugs must be infused via a separate IV line. **DO NOT MIX WITH OTHER MEDICATIONS**.
B. Infusion may be from a glass vial, use an infusion set with an air inlet
C. In the ischemic stroke patient, blood pressure should be maintained at:
    1. Systolic blood pressure: 165-180mmHg
    2. Diastolic blood pressure: 95-105mmHg
D. Concentration
    1. 100mg reconstituted in 100mL diluent (Sterile Water for infusion)
    2. 50mg reconstituted in 50mL diluent (Sterile Water for infusion)
    3. Do not shake or agitate the mixture
E. Standard dosing:
    1. 0.9mg/kg; maximum dose 90mg
    2. 10% of the total dose is administered as an IV bolus over 1 minute (must be administered by the sending facility)
    3. Remaining 90% infused over 60 minutes, may be monitored during interfacility transport

Drug Label Insert Link

Activase (alteplase)

3040 AMIODARONE

Amiodarone	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications

A. Treatment and prophylaxis of ventricular tachycardia and ventricular fibrillation

Contraindications

A. Known hypersensitivity to amiodarone or any of its components
B. Cardiogenic shock
C. Bradycardia
D. Junctional arrythmias
E. Second- or third-degree AV block

Complications

A. Hypotension is the most common side effect; usually occurs within the first several hours of therapy and is rate related
B. Continusous ECG monitoring is mandatory to observe for arrhythmias
    1. Watch for QTc prolongation which may cause arrhythmias (torsades de pointes)
    2. Monitor for bradycardia and AV block
C. Hypokalemia and hypomagnesemia should be corrected before use; may exaggerate a prolonged QTc and cause arrhythmias (torsades de pointes)

Procedure

A. Infusion rates may vary based on concentration used. Review orders with the sending physician prior to transporting.
B. Typical dose is as follows:
    1. Loading dose of 150mg over 10 minutes (15mg/min)
    2. Secondary infusion of 1mg/min for next 6 hours usually mixed as one of the following concentrations:
        a. 450mg in 250mL of D5W yielding 1.8mg/mL infused at 33.3mL/hour
        b. 150mg in 100mL of D5W yielding 1.5mg/mL infused at 40mL/hour.
    3. Maintenance infusion of 0.5mg/min for remaining 18 hours

Drug Label Insert Link

Amiodarone

3050 ANTIBIOTICS

Antibiotics	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications:

A. Antibiotics may be give IV in serious or life threatening infections to rapidly achieve high blood levels of drug for maximum bacterial killing power.

Contraindications:

A. The treating physician will have considered the contraindications to antibiotic administration
B. Review the patient's allergies to medications; if there is a history of an allergic reaction to the drug, the infusion should be discontinued and notify medical control

Complications:

A. If signs or symptoms of an allergic reaction develop (i.e. itching, rash, difficulty breathing, wheezing, hypotension, etc.) discontinue the infusion and notify medical control
B. Treat allergic reactions per protocol
C. If local irritation at the IV site develops:
    1. Decrease the infusion rate by half
    2. Contact medical control

Procedures:

A. Infuse as ordered by the treating physician

Drug Label Insert Link

Daily Med – Current Medication Information

3060 BLOOD/ BLOOD PRODUCTS

Blood/Blood Products	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X
Initiate infusion – Physician evaluated patient with written orders				X	X

Indications:

A. Blood or blood products may be life saving in hemorrhagic and certain anemic states and for other disorders of the hematologic system
B. The treating physician will have considered the indications prior to the onset of transfusion and order the monitoring and maintenance or set guidelines for initiating an infusion of packed red blood cells, platelets or fresh frozen plasma

Contraindications:

A. The treating physician will have considered the contraindications to blood transfusions.
B. Some people may object to transfusion of blood products for religious reasons (i.e. Jehovah's Witness), notify the receiving facility

Complications:

A. Transfusion reactions and hypersensitivity reactions can occur after the onset of blood product infusion
B. Signs and symptoms of a transfusion reaction may include:
    1. Restlessness
    2. Anxiety
    3. Flushing
    4. Chest or lumbar pain
    5. Tachycardia
    6. Tachypnea
    7. Nausea
    8. Shock
    9. Occasionally bleeding from coagulopathy may develop
C. If any of the signs and symptoms listed above develop after the onset of the transfusion, the transfusion should be discontinued, and notify the receiving facility
D. Shock, if present, should be treated according to protocol

Procedure:

A. Maintain or initiate infusion at rate as indicated by the treating physician
B. All blood products should be administered through tubing with a blood filter
C. Complete the blood transfusion checklist
    1. Document blood product number (with pen or sticker) on the blood transfusion checklist, the permanent medical record and pre-hospital trip sheet left at the receiving facility

3070 CALCIUM GLUCONATE

Calcium Gluconate	B	IV	I	P	Adv
Bolus administration – Written physician order				X	X

Indications:

A. For treatment of magnesium toxicity in pregnant patients
B. For patients receiving magnesium that develop
    1. Respiratory depression
    2. CNS depression
    3. Hypotension
    4. Arrhythmia
    5. Depressed reflexes
C. Follow sending physician's orders if any of these occur.

Contraindications:

A. Hypercalcemia
B. Digitalis toxicity

Complications:

A. Bradycardia
B. Hypotension
C. Metallic taste in the mouth
D. Local necrosis
E. Nausea and vomiting
F. Coronary and cerebral artery spasm
G. Peripheral vasodilation

Procedure:

A. Follow sending physician orders
B. Give 500 mg – 1000 mg IV push PRN for signs of magnesium toxicity

Drug Label Insert Link

Calcium gluconate

3080 CARDENE (NICARDIPINE)

Cardene (nicardipine)	B	IV	I	P	Adv
Infusion maintenance and titration – Written physician order				X	X

Actions

A. Cardene is a calcium channel blocker that is more selective towards smooth muscle than cardiac muscle
B. Blood pressure will start to fall within minutes but the effect will slow down over time
C. It reaches about half of its overall blood pressure decrease in 45 minutes

Indications

A. For short-term control of hypertension during transport

Contraindications

A. Should be evaluated by the sending physician prior to transport

Complications

A. Headache
B. Hypotension
C. Nausea and vomiting
D. Tachycardia
E. Less frequent adverse effects include ECG abnormalities, postural hypotension, premature ventricular contractions, injections site reactions, dizziness, sweating, and polyuria

Precautions:

A. Precautions should be evaluated and reported by the treating physician prior to transport

Over dosage

A. Symptoms include:
    1. Marked hypotension, bradycardia, palpitations, flushing, drowsiness, confusion, or slurred speech
B. Calcium gluconate may reverse the calcium blocking effects
C. Vasopressors are indicated for patients exhibiting profound hypotension
D. Contact medical control with signs of overdose

Procedure:

A. Cardene is administered by a slow continuous infusion.
    1. Concentration: 0.1 mg/mL
    2. Cardene comes in 25 mg/10 mL ampules
    3. Dilute with 240 mL of compatible IV fluid. Result is 25 mg Cardene in 250 mL fluid.
B. Administration
    1. Blood pressure should be maintained for a systolic blood pressure between 165-180mmHg and a diastolic blood pressure between 95-105mmHg in the ischemic stroke patient
    2. Initial therapy is 5mg/hour (50mL/hour)
    3. If desired results are not achieved increase infusion rate by 2.5mg/hour (25mL/hour) every 5 minutes until desired effect is achieved.
    4. Dosage should not exceed 15mg/hour (150mL/hour).
C. Maintenance
    1. Follow sending physician written orders
    2. The rate of infusion should be adjusted as needed to maintain desired response

Drug Label Insert Link

Cardene (nicardipine)

3090 CARDIZEM (DILTIAZEM)

Cardizem (diltiazem)	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Action:

A. Calcium channel blocker

Indications:

A. Control of ventricular rates in the interfacility transfer setting due to:
   1. PSVT
   2. Atrial flutter
   3. Atrial fibrillation

Contraindications:

A. Wide complex tachycardia
B. Hypotension
C. Second degree AV block
D. Third degree AV block

Complications:

A. Bradycardia
B. AV blocks
C. Chest pain
D. Syncope
E. Nausea and vomiting

Procedure:

A. Administration
   1. Follow the sending physician orders
   2. Typical dose range is 5-15mg/hr

Drug Label Insert Link

Cardizem (diltiazem)

3100 DIPRIVAN (PROPOFOL)

Diprivan (propofol)	B	IV	I	P	Adv
Infusion maintenance – Written physician order					X

Action

A. Unclear, may facilitate inhibitory transmitters mediated by gamma-aminobutyricacid (GABA)
B. Onset: 40-120 seconds
C. Half-life: 2-8 minutes after infusion stopped, up to 1-3 days after prolonged infusion

Indications

A. Sedation for patients requiring mechanical ventilation
B. Continuation of induction and maintenance of therapeutic induced hypothermia (TIH)

Contraindications

A. Known hypersensitivity
B. Soy or egg allergy

Complications

A. With any complications, verify endotracheal tube is still in place and still patent
B. Hypotension (calculated as 20% below baseline; criteria determined by sending physician) – Typically occurs during loading dose
    1. Contact medical control
    2. Treat with fluid challenge (250-500 ml)
    3. For persistent hypotension refractory to fluid
        a. Titrate dose downward
        b. If hypotension still persists discontinue infusion and switch to benzodiazepines for sedation per medical control
        c. Monitor for signs of under sedation
C. Bradycardia
    1. Verify endotracheal tube is still patent and in place
    2. Contact medical control
    3. Administer atropine
        a. Titrate dose downward
        b. If hypotension still persists discontinue infusion and switch to benzodiazepines for sedation per medical control
        c. Monitor for signs of under sedation
D. Agitation/under sedation
    1. Monitor for signs of under sedation
    2. Titrate dose upward
    3. If agitation/under sedation persists
        a. Contact medical control
        b. Consider discontinuing infusion and switch to benzodiazepines for sedation per medical control
E. Respiratory depression/apnea
F. Decreased cerebral blood flow
G. Bronchospasm

Procedure

A. Concentration
    1. 10mg/mL (1g/100mL)
B. Administration
    1. Follow sending physician orders
    2. Typical dosing - Adult and pediatric
        a. Bolus: **SENDING FACILITY ONLY**
        b. Infusion rate: 5-100 mcg/kg/min
        c. Decreased dosing should be considered in the elderly
    3. Titration – Adult and pediatric
        a. 5-10 mcg/kg/min, titrate every minute to effect
        b. Monitor for hypotension or bradycardia with titration
C. Diprivan (propofol) is administered in combination with an opiate analgesic

Infusion Rate Table

Diprivan (propofol) infusion rate (mL/h) for 10 mg/mL concentration												
Infusion rate		Patient Body Weight (kg)										
(mcg/kg/min)	(mg/kg/hr)	40	50	60	70	80	90	100	110	120	130	140
5	0.3	1.2	1.5	1.8	2.1	2.4	2.7	3	3.3	3.6	3.9	4.2
10	0.6	2.4	3	3.6	4.2	4.8	5.4	6	6.6	7.2	7.8	8.4
16.7	1	4	5	6	7	8	9	10	11	12	13	14
20	1.2	4.8	6	7.2	8.4	9.6	10.8	12	13.2	14.4	15.6	16.8
30	1.8	7.2	9	10.8	12.6	14.4	16.2	18	19.8	21.6	23.4	25.2
33.3	2	8	10	12	14	16	18	20	22	24	26	28
40	2.4	9.6	12	14.4	16.8	19.2	21.6	24	26.4	28.8	31.2	33.6
50	3	12	15	18	21	24	27	30	33	36	39	42
60	3.6	14.4	18	21.6	25.2	28.8	32.4	36	39.6	43.2	46.8	50.4
66.7	4	16	20	24	28	32	36	40	44	48	52	56
70	4.2	16.8	21	25.2	29.4	33.6	37.8	42	46.2	50.4	54.6	58.8
80	4.8	19.2	24	28.8	33.6	38.4	43.2	48	52.8	57.6	62.4	67.2
83.3	5	20	25	30	35	40	45	50	55	60	65	70
90	5.4	21.6	27	32.4	37.8	43.2	48.6	54	59.4	64.8	70.2	75.6
100	6	24	30	36	42	48	54	60	66	72	78	84

Drug Label Insert Link

Diprivan (propofol)

3110 DOPAMINE

Dopamine	B	IV	I	P	Adv
Infusion maintenance and titration – Written physician order				X	X

Description

A. Dopamine is chemically related to epinephrine and norepinephrine.
B. It acts primarily on alpha-1 and beta-1 adrenergic receptors. Effects include
   1. Increasing systemic vascular resistance
   2. Exerting a positive inotropic effect on the heart.
C. In addition, the actions of this drug on dopaminergic receptors dilate renal and splanchnic vasculature, maintaining blood flow.
D. Dopamine is commonly used to treat hypotension associated with cardiogenic shock.

Indications

A. To monitor the administration of dopamine for a physician ordered interfacility transport

Contraindications

A. Patients with hypovolemia

Adverse Reactions

A. Dose-related tachydysrhythmias
B. Hypertension
C. Increased myocardial oxygen demand

Dosage and Administration

A. 400 mg in 250 mL NS or 800 mg in 500 mL NS to produce concentration of 1600 mcg/mL
B. May only be titrated per physician order

Infusion Rate Table

Dopamine infusion rate (mL/h) for 1,600 mcg/mL concentration											
Infusion rate	Patient Body Weight (kg)										
(mcg/kg/min)	40	50	60	70	80	90	100	110	120	130	140
2.5	3.8	4.7	5.6	6.6	7.5	8.4	9.4	10.3	11.3	12.2	13.1
5	7.5	9.4	11.3	13.1	15	16.9	18.8	20.6	22.5	24.4	26.3
10	15	18.8	22.5	26.3	30	33.8	37.5	41.3	45	48.8	52.5
15	22.5	28.1	33.8	39.4	45	50.6	56.3	61.9	67.5	73.1	78.8
20	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105

Special Considerations

A. May become ineffective if added to solutions containing alkaloids
B. At low doses, decreased blood pressure may occur due to peripheral vasodilatation. Increasing infusion rate will correct this.
C. Tissue extravasation at the IV site can cause skin sloughing due to vasoconstriction. Be sure to make Emergency Department personnel aware if there has been any extravasation of dopamine-containing solutions, so that proper treatment can be instituted.
D. Can cause hypertensive crisis in susceptible individuals
E. Certain antidepressants potentiate the effects of this drug. Check for medications or other medications that are being used (especially monoamine oxidase inhibitors).

Drug Label Insert Link

Dopamine

3120 GLYCOPROTEIN IIB/IIIA INHIBITORS (REOPRO, AGGRASTAT, INTEGRILLIN)

Glycoprotein IIB/IIIA Inhibitors	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications:

A. Unstable angina prior to percutaneous coronary intervention to inhibit platelet aggregation
B. Usually used in combination with aspirin and heparin

Contraindications:

A. Active internal bleeding
B. Recent GI or GU bleeding
C. History of stroke
D. Recent surgery or anticoagulant use
E. Severe uncontrolled hypertension
F. History of aneurysm

Complications:

A. Bleeding
B. Allergic reactions
C. Anaphylaxis
D. Hypotension
E. Nausea and vomiting
F. Back or chest pain

Procedures:

A. Abciximab (ReoPro)
    1. Supplied in 10mg/5mL (2mg/mL) vials
    2. Dosing
        a. Initial bolus: 0.25mg/kg over 10-60 minutes
        b. Continuous infusion (after bolus): 0.125mcg/kg/minutes
    3. Infusion is usually mixed with 9mg (4.5mg) into 250mL NS or D5W yielding 36mcg/mL. Eli Lily dosing charts use this mixture.
B. Tirofiban (Aggrastat)
    1. Supplied in 6.25mg/25mL (250mcg/mL) vials or 5mg/100mL (50mcg/mL) premix solution
    2. Dosing
        a. Initial bolus: 0.4mcg/kg/minute over 30 minutes
        b. Continuous infusion (after bolus): 0.1mcg/kg/minute
    3. Infusion must be at the 50mcg/mL concentration. Use the premix solution, add 6.25mg (one 25mL vial) to a 100mL of fluid, or add 12.5mg (two 25mL vials) to 200mL of fluid (may need to remove 50mL from a 250mL bag). Merck supplied dosing charts use this mixture.
C. Eptifibatide (Integrilin)
    1. Supplied in 20mg/10mL or 200mg/100mL (2mg/mL) vials
    2. Dosing
        a. Initial bolus: 180mcg/kg
        b. Continuous infusion (after bolus): 2mcg/kg/minute
    3. Infusion is administered undiluted directly from a 200mg/100mL vial with an infusion pump. Millennium supplied dosing charts use this mixture.

Drug Label Insert Link

ReoPro (abciximab)
Aggrastat (tirofiban)
Integrilin (eptifibatide)

3130 HEPARIN

Heparin	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications:

A. Heparin is frequently administered as an anticoagulant to prevent blood clotting in the setting of ischemic coronary disease, pulmonary embolism, or peripheral vascular conditions such as deep vein thrombosis.

Contraindications:

A. Severe thrombocytopenia
B. Active bleeding

Complications:

A. Hemorrhage from any site may occur
B. Hypersensitivity signs and symptoms
C. If any condition occurs, discontinue the infusion and notify the receiving facility.

Procedure:

A. Usually 20,000 to 40,000 units of heparin are added to 1000mL NS.
B. Usual rate of administration is 1,000units/hour in adults.
C. Maintain rate ordered by the treating physician

Drug Label Insert Link

Heparin

3140 INSULIN

Insulin	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications:

A. Diabetic ketoacidosis
B. Hyperglycemia
C. May be used with dextrose solutions to treat patients with hyperkalemia

Contraindications:

A. Hypoglycemia
B. Hypokalemia
C. The transporting ambulance must have a functioning glucometer for evaluation of blood sugar during the transport.

Precautions:

A. Alcohol and salicylates may potentiate the effects of insulin.
B. Attention must be paid to any signs of hypoglycemia such as:
    1. Diaphoresis
    2. Weakness
    3. Tachycardia
    4. Confusion
    5. Nausea

Procedure:

A. If the patient received a loading dose of insulin document on the patient care report including how much was administered.
B. Blood glucose checks every 30 minutes with a decrease in blood sugar of 30-50dl/hour on average
C. Usual doses:
    1. Adult: 0.1units/kg/hour
    2. Pediatric: 0.1units/kg/hour

3150 LIDOCAINE

Lidocaine	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Action:

A. It is a class 1B antiarrhythmic medication
B. It suppresses the automaticity in the Bundle of HIS-Purkinje system by suppressing spontaneous depolarization of the ventricles during diastole.

Indications:

A. To treat ventricular arrhythmias

Contraindications:

A. Sinus bradycardia
B. Heart block
C. Known hypersensitivity to the drug
D. Administer with caution:
    1. Congestive heart failure
    2. Liver disease
    3. Elderly

Complications:

A. Signs and symptoms of toxicity:
    1. Dizziness
    2. Tinnitus (ringing in the ears)
    3. Tremulousness
    4. Agitation
    5. Seizures
B. Cardiovascular side effects:
    1. Exacerbation of heart block
    2. Hypotension
    3. Bradycardia
    4. May speed the ventricular rate in patients with atrial fibrillation

Procedures:

A. Infusions of 1-4 mg/min are acceptable
    1. The usual initial maintenance dose of lidocaine in the average 70 kg man is 2 mg/min
    2. Slower rates should be used in patients with liver disease or congestive heart failure
B. Typically, a maintenance infusion of lidocaine is 1 gram of lidocaine in 250 cc D5W for a concentration of 4 mg/cc; therefore, the drip rates should be:
    1. 1 mg/min = 15 cc/hr
    2. 2 mg/min = 30 cc/hr
    3. 3 mg/min = 45 cc/hr
    4. 4 mg/min = 60 cc/hr
C. In cases of lidocaine toxicity the medication drip should be discontinued immediately and the patient should be treated with supportive measures
    1. Administer atropine heart block and prepare for pacing
    2. Administer diazepam for seizurese

3160 MAGNESIUM SULFATE

Magnesium sulfate	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Action:

A. Inhibits uterine contractions via smooth muscle relaxation

Indications:

A. To inhibit preterm labor (tocolysis)
B. Pregnancy induced hypertension

Contraindications:

A. Patients with myocardial damage
B. Heart block
C. Administer with caution:
    1. Impaired renal function
    2. Patients receiving CNS depressants or neuromuscular blocking agents

Complications:

A. Signs and symptoms of magnesium toxicity include:
    1. Flushing
    2. Sweating
    3. Hypotension
    4. Sedation
    5. Confusion
    6. Decreased or absent reflexes
    7. Heart block
    8. Respiratory paralysis

Procedures:

A. Calcium gluconate should be available when transporting magnesium sulfate drips
B. Infusion rates will be ordered by the treating physician
C. Typical infusion range is 2 g/hour (range 1-4g/hour)
D. Reflexes should be checked during transport every 15 minutes and notify the receiving facility if reflexes decrease en-route
E. In case of magnesium toxicity, discontinue the infusion and administer calcium gluconate and notify the receiving facility

Drug Label

Magnesium sulfate

3170 MULTIVITAMIN INFUSION

Multivitamin infusion	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications:

A. As a daily multivitamin supplement for patients receiving parenteral nutrition
B. Most commonly, multivitamin infusions (MVI) will be given to patients suspected of being malnourished (e.g. chronic alcoholics).

Contraindications:

A. Preexisting hypervitaminosis
B. Known hypersensitivity to any vitamins or other ingredients
C. These will have been previously considered by the treating physician

Precautions:

A. Not physically compatible with alkaline solutions or moderately alkaline drugs; tetracycline; or ampicillin. Avoid y-site administration in these circumstances.
B. Infusion rate should be slowed if any burning or irritation occurs at the infusion site.

Administration:

A. Multivitamins should be added administered in 500-1000 mL of dextrose, Maintain at prescribed rate with patient on a cardiac monitor (for electrolytes)

Drug Label

INFUVITE® *ADULT* - Multiple Vitamins for Infusion

3180 NITROGLYCERIN

Nitroglycerin	B	IV	I	P	Adv
Infusion maintenance and titration – Written physician order				X	X
Paste maintenance – Written physician order				X	X

Action:

A. Smooth muscle relaxation and consequent dilation of peripheral arteries and veins
B. Results in:
    1. Pooling of blood
    2. Decreased left ventricular end diastolic pressure and wedge pressure (preload)
    3. Coronary artery dilation

Indications:

A. Ischemic coronary states
B. Hypertension

Contraindications:

A. Hypersensitivity
B. Patients taking erectile dysfunction medications
C. Administer with caution:
    1. Evidence of right ventricular infarction
    2. Hypotension
D. Rapid withdrawal of nitroglycerin infusion may result in worsening of ischemia

Procedure:

A. The patient should be observed clinically for:
    1. Pain relief
    2. Blood pressure changes
    3. Other signs of poor perfusion
B. Nitroglycerin is a concentrated drug that should be administered after dilution. Usual mixtures include:
    1. 50mg in 500mL of D5W or NS (100mcg/mL concentration)
    2. 50mg in 250mL of D5W or NS (200mcg/mL concentration)
C. Maintain infusion rate ordered by sending physician
D. Infusion rates may be increased by physician order for:
    1. Worsening ischemic chest pain
    2. Hypertension.
E. Nitrates absorb in plastic so the amount of drug exiting the IV tubing may be much less than the amount entering the tubing
F. Decrease the infusion rate by half if, in conjunction with a systolic blood pressure <100mmHg or with signs of poor perfusion which may include:
    1. Pallor
    2. Sweating
    3. Decreased capillary refill
    4. Decreased mental alertness
G. Notify the receiving facility in the event of complications.

Necessary Flow Rates (mL/hr)		
Desired Dose (mcg/min)	Solution Concentration (mcg/mL)	
	100	200
5	3	1.5
10	6	3.0
15	9	4.5
20	12	6
30	18	9
40	24	12
50	30	15
60	36	18

Drug Label

Nitroglycerin

3190 PARENTERAL NUTRITION

Parenteral Nutrition	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Abbreviations:

A. PN – Parenteral Nutrition
B. TPN – Total Parenteral Nutrition; administered via central line
C. PPN – Peripheral Parenteral Nutrition; administered via peripheral intravenous line
D. CVC/PICC – Central Venous Catheter/Peripheral Intravenous Central Catheter; TPN may be administered through both types of central venous lines

Description:

A. Parenteral Nutrition (PN) is feeding a patient intravenously
B. PN may contain any combination of salts, glucose, amino acids, lipids, and vitamins; it is mixed based on the patient's nutritional needs
C. Total Parenteral Nutrition (TPN) means the patient is receiving nutrition intravenously only; no food/nutrition is given by other routes

Indications:

A. To prevent the adverse effects of malnutrition in patients who are unable to obtain adequate nutrients by oral or enteral routes

Contraindications:

A. The treating physician will have considered the contraindications to TPN administration

Procedure:

A. Review the following before transporting:
    1. Verify there is a sending physician order for TPN infusion; the physician may order as per orders on the parenteral nutrition formulations physician order form
    2. Determine if blood glucose should be monitored and how frequently
    3. Obtain a copy of the parenteral nutrition formulations physician order form for your documentation and a second copy for the receiving facility
    4. Ask for D10W from the sending facility to transport with the patient
    5. Document the patient's weight
B. Inspect the PN container/formulation
    1. Look for leaks, color changes, emulsion cracking, or precipitates
    2. If any present, discontinue the infusion
C. Review the PN label
    1. Verify the patient's name
    2. Expiration date
    3. The formulation matches the parenteral nutrition formulations physician order form
    4. Note if there is insulin in the formulation
D. PN can only be administered by infusion pump with an in-line filter
    1. 1.2 micron filter below lipid emulsion insertion at the Y-site
    2. 0.22 micron filter if no lipid emulsion
E. Maintain infusion rate ordered by sending physician
F. Document input/output amounts prior to and during transport
G. If the PN infusion is discontinued, follow these steps:
    1. Flush CVC lines with 10 mL of fluid and PICC lines with 30 mL of fluid
    2. Immediately start an infusion of D10W at the TPN ordered rate
    3. If D10W is not available, start an infusion of D5W at the same rate
    4. Contact the sending physician for additional orders
H. If any complications contact the sending physician and notify the receiving facility

Notes

A. Treat hypoglycemia per protocol
B. Watch for signs of infiltration and/or phlebitis if PN is administered through a peripheral line
C. No medications are to be infused via the TPN catheter unless otherwise ordered
D. Aseptic technique is critical
    1. Patients receiving PN have an increased risk of infection, usually due to having an indwelling central venous catheter

2. Using a separate catheter or lumen to administer PN and minimizing manipulation of the catheter reduces the risk of infection

E. Patients receiving PN for the first time may become hyperglycemic
F. If an infusion of TPN has to be discontinued, D10W and D5W are administered since insulin is usually a component of TPN that even after being discontinued can cause hypoglycemia
G. Insulin may be a component of the PN formulation
H. Use of an in-line filter is required during the administration of PN formulations
    1. Due to the multiple additives used in PN, a large number of particulates may contaminate the fluid
    2. A clogged filter and associated pump alarm is a sign of precipitate in the fluid
    3. NEVER REMOVE A CLOGGED FILTER AND ALLOW THE PN TO INFUSE WITHOUT A FILTER
I. PVC containers and administration sets cannot be used if a lipid emulsion is being infused

3200 POTASSIUM INFUSION

Potassium Infusion	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Indications

A. Electrolytes may be infused when there is confirmed or suspected deficiencies
B. In conjunction with an insulin infusion

Precautions

A. Direct injection of any concentrated solution of potassium can be instantly fatal
B. Exceeding the prescribed rates of potassium solutions may result in cardiac conduction abnormalities

Administration

A. Use of an infusion pump is recommended in all situations and required with any dose exceeding 60 mEq/24 hours
B. Maximum infusion rate of potassium is 10 mEq/hr
C. ECG should be monitor with potassium replacement and is required when administered at 10 mEq/hr

3210 PROTONIX (PANTOPRAZOLE SODIUM)

Protonix (pantoprazole sodium)	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Action:

A. Blocks the hydrogen/potassium adenosine triphosphatase enzyme system; acts specifically to block hydrogen production in the gastric lumen reducing acid production

Indications:

A. Upper gastrointestinal bleeding

Contraindications:

A. Sensitivity to pantoprazole or any of its components

Complications:

A. Abdominal discomfort/pain
B. Diarrhea
C. Headache

Precautions

A. Incompatible with midazolam – use separate line or flush before and after

Dosage and Administration:

A. Concentration
    1. 0.8 mg/mL (80 mg/100 mL usually D5W)
B. Administration
    1. Follow sending physician orders
    2. Typical dosing
        a. Bolus: **SENDING FACILITY ONLY** (typically 80 mg IV)
        b. Infusion rate: 8 mg/hour (10 mL/hour with a 0.8 mg/mL concentration)
    3. Titration of medication is not required

Drug Label Insert Link

Protonix (pantoprazole sodium)

3220 SANDOSTATIN (OCTREOTIDE ACETATE)

Sandostatin (octreotide acetate)	B	IV	I	P	Adv
Infusion maintenance – Written physician order				X	X

Action:

A. Effective in reducing hepatic blood flow, wedged hepatic venous pressure, and azygous blood flow by inhibiting the release of vasodilatory hormones, like glucagon, and promotes splanchnic vasoconstriction and decreased portal flow

Indications:

A. Esophageal varices

Contraindications:

A. Sensitivity to octreotide or any of its components

Complications:

A. Abdominal discomfort/pain
B. Diarrhea
C. Nausea
D. Backache
E. Dizziness/headache

Precautions

A. May effect blood glucose level in patients who have pre-existing diabetes or who may be at risk for developing Type I diabetes mellitus; consider baseline blood glucose level and be aware of the potential for changes in blood sugar

Dosage and Administration:

A. Concentration
    1. 5 mcg/mL (500 mcg/100 mL usually D5W)
B. Administration
    1. Follow sending physician orders
    2. Typical dosing
        a. Bolus: **SENDING FACILITY ONLY** (typically 50 mcg IV)
        b. Infusion rate: 50 mcg/hour (10 mL/hour with a 5 mcg/mL concentration)
    3. Titration of medication is not required

Drug Label Insert Link

Sandostatin (octreotide acetate)

3230 TNKASE (TENECTEPLASE)

Tenecteplase (TNKase)	B	IV	I	P	Adv
Monitor for effects post-administration				X	X

TNKase (Tenecteplase) is a thrombolytic administered for acute myocardial infarction as a single bolus over 5 seconds. The following protocol is to monitor for the effects of the administered medication. The administered TNKase (Tenecteplase) will still be active during the interfacility transport.

Action

A. Tissue plasminogen activator (tPA)
B. Administration of thrombolytic agents results in the dissolving of blood clots

Half-life

A. Initial half-life – 20 to 24 minutes
B. Terminal phase half-life – 90 to 130 minutes

Indication

A. Acute myocardial infarction

Contraindications

A. Active internal bleeding
B. History of CVA
C. Intracranial or intraspinal surgery or trauma within 2 months
D. Intracranial neoplasm, AV malformation, or aneurysm
E. Known bleeding diathesis
F. Severe uncontrolled hypertension

Complications

A. Bleeding, the most common
    1. Should serious bleeding (not controlled by local pressure) occur, any concomitant heparin or antiplatelet agents should be discontinued immediately
B. Reperfusion arrhythmias – Treat according to protocol
C. Administering anticoagulants and drugs that alter platelet function with TNKase may increase the risk of bleeding
D. Notify the receiving facility with any of the following complications:
    1. Bleeding from any site not controlled with direct pressure
    2. Decreased level of consciousness; complaint of headache, seizure or new neurologic complaint, change, or finding the may suggest intracranial hemorrhage
    3. GI or GU bleeding
    4. Unexplained hypotension (systolic blood pressure <100mmHg) not readily reversed with a fluid bolus or Trendelenburg position
    5. When prolonged chest compressions are anticipated

Drug Label

TNKase (tenecteplase)

3240 VECURONIUM BROMIDE

Vecuronium Bromide	B	IV	I	P	Adv
Infusion maintenance – Written physician order					X

Pharmacology and Actions

A. Vecuronium bromide is a non-depolarizing neuromuscular blocking agent that prevent acetylcholine from binding to receptors on muscle end plate, thus blocking depolarization and resulting in complete paralysis
B. Onset of action to occur within 1 minute of administration and the effect persists for 25-35 minutes
C. 25% of muscle twitch strength returns within 24-40 minutes and there is 95% recovery within 45-60 minutes of administration

Indications

A. Maintenance of chemical paralysis for interfacility transport

Precautions

A. Proper assessment of endotracheal tube placement should be documented every 10 minutes
B. Continuous end tidal CO2 monitoring and pulse oximetry are to be used to ensure endotracheal tube patency
C. Assess and treat for under-sedation, signs may include:
    1. Tachycardia
    2. Hypertension
    3. Lacrimation
    4. Diaphoresis

Administration

A. Dose and administration time should be determined with the sending physician prior to initiating mechanical ventilation
B. Dosing and time calculations must be confirmed and signed by the sending physician

Dose

A. The recommended dose is 0.06mg/kg for patients over 11 years old, given within 25 to 30 minutes of the previous dose

Special Considerations

A. Neuromuscular blockers do not obtund consciousness or alter the pain threshold of your patient, so the administration of a sedative and analgesics is required for these patients
B. Vecuronium is well tolerated in patients with renal failure.

Drug Label

Vecuronium bromide

4000 INTERFACILITY OBSTETRIC TRANSPORTS

4010 GENERAL GUIDELINES FOR ASSESSMENT AND TREATMENT OF THE OBSTETRIC PATIENT

The following are general guidelines for the assessment and care provided to the obstetric patient, more in depth information is provided further in the protocol.

A. Place the patient in the left-lateral recumbent position, provide support with a blanket or towel to maintain this position
B. Assess vital signs every 15 minutes and note the patient's temperature
C. Attempt to obtain a fetal heart rate (FHR) every 15 minutes and document
D. Maintain or establish at least one IV line (18ga. or larger), maintain the infusion rate ordered by the sending physician. If an infusion rate was not ordered, infuse at a rate of 125 mL/hour or at an appropriate rate depending on patient status.
E. Provide oxygen by non-rebreather based on the fetal heart rate (FHR) or maternal condition. Monitor pulse oximetry, maintaining a level ≥ 90%.
F. Assess uterine contractions and document findings
G. Note and quantify any bleeding or leaking of fluid
H. Report pertinent information, obtained from the sending facility and observed while en-route, about the patient's condition to the receiving facility

4020 CONTRAINDICATIONS TO MATERNAL TRANSPORT

Consider the contraindications before accepting to transport a pregnant or post-partum patient.

A. Inability to stabilize the mother's condition, examples includes:
   1. Uncontrolled vaginal bleeding/Postpartum hemorrhage
   2. Uncontrolled hypertension
   3. Pre-eclampsia/Eclampsia (requires continuous fetal heart monitoring)

B. Signs of fetal distress
   1. Decreased fetal movement
   2. Changes in fetal heart rate
      a. Variable decelerations – Variable slowing of the heart rate, possibly due to cord compression (discuss possible risks of transport with sending physician)
      b. Late decelerations – Slowing of the fetal heart rate at the apex of a contraction, indicative of uteroplacental insufficiency
      c. Early decelerations – Slowing of the heart rate at the beginning of a contraction, indicative of active labor
      d. Bradycardia – Fetal heart rate less than 110 beats per minute
      e. Tachycardia – Fetal heart rate greater than 160 beats per minute
      f. Prolonged deceleration

C. Imminent delivery

D. Retained placenta

E. Procedure, patient monitoring, fetal monitoring, or medication administration/maintenance outside of protocol
   1. Examples include:
      a. Continuous fetal heart monitoring (may be transported if the patient and fetus are stable and a facility staff member accompanies to perform monitoring, refer to Operations Policy 14 - Section 3)
      b. Pitocin administration/maintenance
      c. Administration of beta-blockers for hypertension
   2. Patient monitored therapies may be transported if the patient and fetus are stable; an example is:
      a. Marcaine infusion by a special pump directly infused into a surgical site for pain management

F. Traffic or weather conditions that may inappropriately prolong transport, especially with a high risk of delivery

4030 SPECIFIC INFORMATION NEEDED

This section lists information to obtain from the sending nurse and/or physician. Determine what information is important to provide to the receiving nurse and/or physician.

A. Patient's age - Teenagers and women over 35-years-old are predisposed to many obstetric complications
B. Gravida (G) / Parity (P) / Abortions (Ab)
    1. Gravida - How many times has the patient been pregnant?
    2. Parity (Para) - How many deliveries has the patient had at or beyond 20 weeks?
        a. Delivery of multiples (e.g. twins, triplets, etc.) is counted as 1
        b. Stillborn deliveries are counted
    3. Abortions - Documented as spontaneous or elective
C. Weeks Gestation
    1. Full-term is considered anywhere from 36-40 weeks gestation
D. Estimated Date of Confinement (EDC) - Approximately when the patient is expected to deliver
E. Obstetric History - Consider and document, if appropriate, for the pregnant and post-partum patient
    1. Were the deliveries vaginal or cesarean? Has the patient had a vaginal delivery after a previous cesarean section?
    2. Did the mother or previous babies have any complications with previous pregnancies or deliveries?
    3. Has the mother had any pre-term deliveries? If so, at what gestation did she deliver and what was the outcome?
    4. What was the length of the last labor?
    5. How many living children does she have? What was the birth weight of each child?
    6. Has there been less than 1 year between the last delivery and beginning of this pregnancy?
F. Current pregnancy
    1. Is the patient having contractions?
        a. When did they start?
        b. Any change in intensity and frequency?
        c. Is there any accompanying backache and pelvic or rectal pressure?
    2. Is there any vaginal bleeding or spotting present? Is there currently active bleeding?
        a. When did the bleeding begin and was there anything associated with it that may have precipitated it? Was the blood bright red or dark? Any bloody show (mucus combined with blood)?
        b. Is the bleeding painless or with combined with abdominal pain or contractions?
        c. Attempt to quantify the amount of bleeding (number of pads changed)
    3. Is the bag of waters (BOW) intact or ruptured?
        a. If ruptured, was there a gush or intermittent trickle of fluids? - Leakage of amniotic fluid is uncontrollable and a small amount of clear fluid may be confused with incontinence.
        b. What time did it happen?
        c. What color is the fluid and is there an odor? - Meconium stained, dark indicating the presence of blood, clear
        d. Is the Chux pad under the patient wet or is fluid pooling?
    4. Does the patient have any current medical problems or complications with the pregnancy? Is the patient taking any medications and for what?
    5. Prenatal care
        a. Document as consistent, limited (3 or fewer), or none
        b. Has the patient had an ultrasound?
    6. Multiple gestation - pregnancy with more than 1 fetus
    7. Amount of weight gain during pregnancy
    8. Patient blood type
    9. Rubella immunization status
    10. Group Beta Streptococcus (GBS) status if ≥ 36 weeks gestation
    11. History of smoking, alcohol consumption, or substance abuse - Frequency, last use

4040 SPECIFIC OBJECTIVE FINDINGS

Consider assessing and documenting these specific items. A vaginal examination can only be performed by the sending physician or nurse. Document the findings for the most recent vaginal examination prior to departure.

A. Assessments performed by physicians or nurses only - Document prior to transport
   1. Dilation - Widening of the cervix opening for delivery of the baby
      a. Measured in centimeters
      b. 0 cm - 10 cm
   2. Effacement - As labor nears the cervix will thin and shorten eventually becoming a part of the uterine wall,
      a. Measured as a percentage
      b. 0% - 100%
   3. Station - How far down the baby's head has come into the pelvis, measured in centimeters as follows:
      a. -3 cm to -1 cm - The baby has dropped but not settled into the pelvis, referred to as a negative station
      b. 0 cm - The baby has settled into the pelvis but not started descent to the birth canal, referred to as a zero station
      c. 1 cm to 3 cm - The baby descent to the cervix from the pelvis, referred to as a positive station
   4. Other objective findings to consider obtaining from sending physician or nurse
      a. Fundal height - Documented in centimeters, it is the measurement from the pubis symphysis to the fundus; only document if provided by the sending facility, do not measure
      b. Fetal position - How the fetus is presenting for delivery; for example, head-down, breach, transverse
         i. If the fetus position is known, fetal heart tones can be heard clearest over the fetal spine
      c. Location of placenta implantation - Note if there is any concern about placenta previa or placenta abruption
      d. Fetal heart tones - Information from fetal heart monitoring at the sending facility
         i. Rate obtained by the sending facility
         ii. Document any rate variability, acceleration, or deceleration which may be a sign of fetal distress observed by the sending facility

B. Objective findings that can be assessed by the ambulance crew - Document findings prior to transport from the sending facility in order to establish a baseline for comparison
   1. Fetal activity
      a. Document if the activity of the fetus has changed
      b. Reassess during transport and ask the mother to notify you of any changes
   2. Fetal heart rate
      a. Attempt to obtain the fetal heart rate every 15 minutes with the Doppler stethoscope
      b. Normal rate is between 110-160 beats per minute; if not within this range contact the sending facility
   3. Contractions - Can be assessed by palpating the fundus and noting:
      a. Strength
         i. Mild contractions - Can freely indent the fundus
         ii. Moderate contractions - Can indent the fundus slightly
         iii. Strong contractions - Firm tension of the fundus
      b. Frequency
      c. Duration
      d. Document the patient's responses to the contractions
         i. Observed by you - Gestures, posture, facial expressions
         ii. Verbal description provided by patient
      e. Palpate the abdomen between contractions for localized or general tenderness
   4. Observe for indications of advancing labor - Apprehension, restlessness, increasing difficulty coping with contractions, screaming, nausea and vomiting, bearing-down effort, bulging perineum

4050 FETAL DISTRESS

Definition

A. Fetal heart rate <60 or >160 beats per minute

Treatment

A. Check for imminent delivery
B. Use “key” formula on the LOCK
    1. L - Left-lateral recumbent position, place the mother in this position
    2. O - Oxygen, 100% by non-rebreather
    3. C - Correct contributing factors
    4. K - Keep reassessing the fetal heart rate (FHR) and treat when indicated
C. Hypotension – Administer a 500 mL fluid bolus
D. Contact the sending facility; consider rendezvousing with a specialty care program or diverting to the closest hospital
E. Variable decelerations in fetal heart rate – If not relieved with the mother in the left-lateral recumbent position, reposition in the following order:
    1. Right side
    2. The hands and knees
    3. The knee-chest position

4060 POSTPARTUM HEMORRHAGE

Definition

A. Blood loss of 1000 mL or greater after delivery (St. Anthony Summit Medical Labor and Delivery guideline)
B. Can occur up to 48 hours after delivery

Assessment

A. Abdominal palpation may reveal a boggy, enlarged, soft uterus
B. Note the discharge of large clots with hemorrhage

Treatment

A. Perform fundal massage every 5-15 minutes, note the fundus location relative to umbilicus, firmness, and blood flow/discharge of clots
B. Do not attempt to stop bleeding by packing or applying pressure with bandages over the vaginal opening
C. Contact the sending facility; consider rendezvousing with a specialty care program or diverting to the closest hospital

4070 PREGNANCY INDUCED HYPERTENSION (PIH)

Pregnancy induced hypertension (PHI) occurs due to a chain reaction of events that leads to vasoconstriction and increased peripheral vascular resistance. Perfusion of body organs is decreased; the function of the kidneys, liver, brain, and placenta are impaired.

A. Preeclampsia
   1. Characterized by hypertension, proteinuria, and edema

B. Eclampsia
   1. Development of clonic-tonic seizures in a preeclamptic patient
   2. Can occur before or during labor or early postpartum
   3. Signs of impending seizure
      a. Headache
      b. Vision changes
      c. Anxiety
      d. Epigastric pain
      e. Hyperreflexia/clonus – clonus is the rapid contraction and relaxation of a muscle after forceful extension or flexion; can be assessed in the calf muscle by forcibly pushing the foot up
   4. Seizures usually begin as a facial twitch around the mouth

C. HELLP syndrome
   1. Serious complication of preeclampsia
   2. Stands for:
      a. Hemolysis
      b. Elevated Liver enzymes
      c. Low Platelets

D. Assessment
   1. Hypertension
      a. Check blood pressure in left-lateral recumbent position
      b. Hypertension associated with PIH may be unstable, changing between blood pressure taken consecutively
      c. Rise in systolic pressure of 30 mmHg or diastolic pressure of 15 mmHg based on previously known pressures; or
      d. Blood pressure of 140/90 or greater; if systolic >180 mmHg or diastolic >120 mmHg treat per Seizures with Pregnancy (Eclampsia/Pre-eclampsia) in the Obstetric/Gynecological Emergencies protocol
   2. Edema
      a. Edema of the eyelids, face, and hands is typical of PIH
      b. May have pitting edema of the lower extremities

Assessment of Edema	Score
Minimal edema of lower extremities	+1
Marked edema of extremities	+2
Edema of lower extremities, face, and hands	+3
Generalized edema including abdomen and sacrum	+4

   3. Central nervous system irritability
      a. Headache
      b. Nausea and vomiting
      c. Anxiety and apprehension
      d. Hyperreflexia and ankle clonus

Assessment of Hyperreflexia	Score
None	0
Sluggish	+1
Normal	+2
Brisk	+3
Brisk/Transient clonus (fades away)	+4
Brisk/Sustained clonus (remains with continued pressure on the foot)	+5

   4. Impaired renal function

    a. Oliguria – Urine output < 30mL/hour
5. Hepatic involvement
    a. Epigastric pain
    b. Nausea and vomiting
    c. Malaise
    d. Jaundice

E. Treatment and Transport
1. Perform obstetric assessment and obtain history of any symptoms prior to transport
2. Follow sending physician orders
3. Consider oxygen administration, watch for pulmonary edema
4. Verify patency and maintain IV
5. Evaluate blood pressure every 10-15 minutes or more frequently with signs and symptoms of eclampsia
6. Assess fetal heart tones every 15 minutes
7. Decrease sensory stimulation during transport, including lowering lights, keeping sirens off, minimizing noise including equipment sounds
8. Prepare to treat shock per protocol with signs of coagulopathy, which may include:
    a. Petechia
    b. Bruising
    c. Bleeding IV sites
9. Treat eclamptic seizures per protocol
10. Contact the sending facility; consider rendezvousing with a specialty care program or diverting to the closest hospital

APPENDIX A. COMMON LAB VALUES

HEMATOLOGY Red Blood Cells	
RBC (Male)	4.2 - 5.6 M/µL
RBC (Female)	3.8 - 5.1 M/µL
RBC (Child)	3.5 - 5.0 M/µL

HEMATOLOGY White Blood Cells	
WBC (Male)	3.8 - 11.0 K / mm^3
WBC (Female)	3.8 - 11.0 K / mm^3
WBC (Child)	5.0 - 10.0 K / mm^3
HEMOGLOBIN	
Hgb (Male)	14 - 18 g/dL
Hgb (Female)	11 - 16 g/dL
Hgb (Child)	10 - 14 g/dL
Hgb (Newborn)	15 - 25 g/dL

HEMATOCRIT	
Hct (Male)	39 - 54%
Hct (Female)	34 - 47%
Hct (Child)	30 - 42%
MCV	78 - 98 fL
MCH	27 - 35 pg
MCHC	31 - 37%
neutrophils	50 - 81%
bands	1 - 5%
lymphocytes	14 - 44%
monocytes	2 - 6%
eosinophils	1 - 5%
basophils	0 - 1%

CARDIAC MARKERS	
troponin I	0 - 0.1 ng/mL (onset: 4-6 hrs, peak: 12-24 hrs, return to normal: 4-7 days)
troponin T	0 - 0.2 ng/mL (onset: 3-4 hrs, peak: 10-24 hrs, return to normal: 10-14 days)
myoglobin (Male)	10 - 95 ng/mL (onset: 1-3 hrs, peak: 6-10 hrs, return to normal: 12-24 hrs)
myoglobin (Female)	10 - 65 ng/mL (onset: 1-3 hrs, peak: 6-10 hrs, return to normal: 12-24 hrs)

GENERAL CHEMISTRY	
acetone	0.3 - 2.0 mg%
albumin	3.5 - 5.0 gm/dL
alkaline phosphatase	32 - 110 U/L
anion gap	5 - 16 mEq/L
ammonia	11 - 35 µmol/L
amylase	50 - 150 U/dL
AST,SGOT (Male)	7 - 21 U/L
AST,SGOT (Female)	6 - 18 U/L
bilirubin, direct	0.0 - 0.4 mg/dL
bilirubin, indirect	total minus direct
bilirubin, total	0.2 - 1.4 mg/dL
BUN	6 - 23 mg/dL
calcium (total)	8 - 11 mg/dL
carbon dioxide	21 - 34 mEq/L
carbon monoxide	symptoms at greater than or equal to 10% saturation
chloride	96 - 112 mEq/L
creatine (Male)	0.2 - 0.6 mg/dL
creatine (Female)	0.6 - 1.0 mg/dL
creatinine	0.6 - 1.5 mg/dL
ethanol	0 mg%; Coma: greater than or equal to 400 - 500 mg%
folic acid	2.0 - 21 ng/mL
glucose	65 - 99 mg/dL (diuresis greater than or equal to 180 mg/dL)

HDL (Male)	25 - 65 mg/dL
HDL (Female)	38 - 94 mg/dL
iron	52 - 169 µg/dL
iron binding capacity	246 - 455 µg/dL
lactic acid	0.4 - 2.3 mEq/L
lactate	0.3 - 2.3 mEq/L
lipase	10 - 140 U/L
magnesium	1.5 - 2.5 mg/dL
osmolarity	276 - 295 mOsm/kg
parathyroid hormone	12 - 68 pg/mL
phosphorus	2.2 - 4.8 mg/dL
potassium	3.5 - 5.5 mEq/L
SGPT	8 - 32 U/L
sodium	135 - 148 mEq/L
T3	0.8 - 1.1 µg/dL
thyroglobulin	less than 55 ng/mL
thyroxine (T4) (total)	5 - 13 µg/dL
total protein	5 - 9 gm/dL
TSH	Less than 9 µU/mL
urea nitrogen	8 - 25 mg/dL
uric acid (Male)	3.5 - 7.7 mg/dL
uric acid (Female)	2.5 - 6.6 mg/dL

ARTERIAL VALUES	
pH	7.35 - 7.45
PaCO2	35 - 45 mm Hg
HCO3	22 - 26 mEq/L
O2 saturation	96 - 100%
PaO2	85 - 100 mm Hg
BE	-2 to +2 mmol/L

VENOUS VALUES	
pH	7.31 - 7.41
PaCO2	41 - 51 mm Hg
HCO3	22 - 29 mEq/L
O2 saturation	60 - 85%
PaO2	30 - 40 mm Hg
BE	0 to +4 mmol/L

URINE	
color	Straw
specific gravity	1.003 - 1.040
pH	4.6 - 8.0
Na	10 - 40 mEq/L
K	Less than 8 mEq/L
C1	Less than 8 mEq/L
protein	1 - 15 mg/dL
osmolality	80 - 1300 mOsm/L

24 HOUR URINE	
amylase	250 - 1100 IU / 24 hr
calcium	100 - 250 mg / 24 hr
chloride	110 - 250 mEq / 24 hr
creatinine	1 - 2 g / 24 hr
creatine clearance (Male)	100 - 140 mL / min
creatine clearance (Male)	16 - 26 mg / kg / 24 hr
creatine clearance (Female)	80 - 130 mL / min
creatine clearance (Female)	10 - 20 mg / kg / 24 hr
magnesium	6 - 9 mEq / 24 hr
osmolality	450 - 900 mOsm / kg
phosphorus	0.9 - 1.3 g / 24 hr
potassium	35 - 85 mEq / 24 hr
protein	0 - 150 mg / 24 hr
sodium	30 - 280 mEq / 24 hr
urea nitrogen	10 - 22 gm / 24 hr
uric acid	240 - 755 mg / 24 hr

COAGULATION	
ACT	90 - 130 seconds
APTT	21 - 35 seconds
platelets	140,000 - 450,000 /mL

plasminogen	62 - 130%
PT	10 - 14 seconds
PTT	32 - 45 seconds
FSP	Less than 10 µg/dL
fibrinogen	160 - 450 mg/dL
bleeding time	3 - 7 minutes
thrombin time	11 - 15 seconds

LIPID PANEL (Adult)	
cholesterol (total)	Less than 200 mg/dL desirable
cholesterol (HDL)	30 - 75 mg/dL
cholesterol (LDL)	Less than 130 mg/dL desirable
triglycerides (Male)	Greater than 40 - 170 mg/dL
triglycerides (Female)	Greater than 35 - 135 mg/dL

CEREBRAL SPINAL FLUID	
appearance	clear
glucose	40 - 85 mg/dL
osmolality	290 - 298 mOsm/L
pressure	70 - 180 mm/H2O
protein	15 - 45 mg/dL
total cell count	0 - 5 cells
WBCs	0 - 6 / µL

HEMODYNAMIC PARAMETERS	
cardiac index	2.5 - 4.2 L / min / m^2
cardiac output	4 - 8 LPM
left ventricular stroke work index	40 - 70 g / m^2 / beat
right ventricular stroke work index	7 - 12 g / m^2 / beat
mean arterial pressure	70 - 105 mm Hg
pulmonary vascular resistance	155 - 255 dynes / sec / cm to the negative 5
pulmonary vascular resistance index	255 - 285 dynes / sec / cm to the negative 5
stroke volume	60 - 100 mL / beat
stroke volume index	40 - 85 mL / m^2 / beat
systemic vascular resistance	900 - 1600 dynes / sec / cm to the negative 5
systemic vascular resistance index	1970 - 2390 dynes / sec / cm to the negative 5
systolic arterial pressure	90 - 140 mm Hg
diastolic arterial pressure	60 - 90 mm Hg
central venous pressure	2 - 6 mm Hg; 2.5 - 12 cm H2O
ejection fraction	60 - 75%
left arterial pressure	4 - 12 mm Hg
right atrial pressure	4 - 6 mm Hg
pulmonary artery systolic	15 - 30 mm Hg
pulmonary artery diastolic	5 - 15 mm Hg
pulmonary artery pressure	10 - 20 mm Hg
pulmonary artery wedge pressure	4 - 12 mm Hg
pulmonary artery end diastolic pressure	8 - 10 mm Hg
right ventricular end diastolic pressure	0 - 8 mm Hg

NEUROLOGICAL VALUES	
cerebral perfusion pressure	70 - 90 mm Hg
intracranial pressure	5 - 15 mm Hg or 5 - 10 cm H2O

Denver Metropolitan
Prehospital Protocols

St. Anthony Prehospital
Mountain Protocol Set

Denver Metro
EMS
Medical Directors

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The process that has been initiated in the construction of this revised set of protocols will remain in place. The authors will continue to edit and revise the protocols to reflect the dynamic role of emergency medical services within the medical care community.

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0001 GENERAL GUIDELINES: INTRODUCTION

INTRODUCTION

The following protocols have been adopted from the approved Denver Metro EMS Medical Directors (DMEMSMD) group. These protocols define the standard of care for the St. Anthony intermountain region and delineate the expected practice, actions, and procedures to be followed.

No protocol can account for every clinical scenario encountered, and the DMEMSMD recognize that in rare circumstances deviation from these protocols may be necessary and in a patient's best interest. Variance from protocol should always be done with the patient's best interest in mind and backed by documented clinical reasoning and judgment. Whenever possible, prior approval by direct verbal order from base station physician is preferred. Additionally, all variance from protocol should be documented and submitted for review by agency Medical Director in a timely fashion.

The protocols have a new look and are presented in an algorithm format. An algorithm is intended to reflect real-life decision points visually. An algorithm has certain limitations, and not every clinical scenario can be represented. Although the algorithm implies a specific sequence of actions, it may often be necessary to provide care out of sequence from that described in the algorithm if dictated by clinical needs. An algorithm provides decision-making support, but need not be rigidly adhered to and is no substitute for sound clinical judgment.

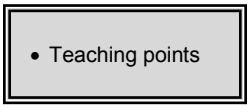
In order to keep protocols as uncluttered as possible, and to limit inconsistencies, individual drug dosing has not been included in the algorithms. It is expected the EMTs will be familiar with standard drug doses. Drug dosages are included with the medications section of the protocols as a reference.

If viewing protocol in an electronic version, it will be possible to link directly to a referenced protocol by clicking on the hyperlink, which is underlined.

PROTOCOL KEY

Boxes without any color fill describe actions applicable to all levels of EMT. Boxes with orange fill are for actions for EMT-Intermediate level or higher, and blue-filled boxes are for EMT-paramedic level. When applicable, actions requiring base contact are identified in the protocol.

Teaching points deemed sufficiently important to be included in the protocol are separated into grey-filled boxes with a double line border:



PEDIATRIC PROTOCOLS

For the purposes of these clinical care protocols, pediatric patients are those < 12 years of age, except where identified in a specific protocol.

CONFIDENTIALITY

A. The patient-physician relationship, the patient-registered nurse relationship, and the patient-EMT relationship are recognized as privileged. This means that the physician, nurse, or EMT may not testify as to confidential communications unless:
    1. The patient consents
    2. The disclosure is allowable by law (such as Medical Board or Nursing Board proceedings, or criminal or civil litigation in which the patient's medical condition is in issue)
B. The prehospital provider must keep the patient's medical information confidential. The patient likely has an expectation of privacy, and trusts that personal, medical information will not be disclosed by medical personnel to any person not directly involved in the patient's medical treatment.
    1. Exceptions
        i. The patient is not entitled to confidentiality of information that does not pertain to the medical treatment, medical condition, or is unnecessary for diagnosis or treatment.
        ii. The patient is not entitled to confidentiality for disclosures made publicly.
        iii. The patient is not entitled to confidentiality with regard to evidence of a crime.
C. Additional Considerations:
    1. Any disclosure of medical information should not be made unless necessary for the treatment, evaluation or diagnosis of the patient.
    2. Any disclosures made by any person, medical personnel, the patient, or law enforcement should be treated as limited disclosures and not authorizing further disclosures to any other person.
    3. Any discussions of prehospital care by and between the receiving hospital, the crewmembers in attendance, or at in-services or audits are done strictly for educational or performance improvement purposes. Further disclosures are not authorized.
    4. Radio communications should not include disclosure of patient names.
    5. This procedure does not preclude or supersede your agency’s HIPAA policy and procedures.

CONSENT

General Principles: Adults

A. An adult in the State of Colorado is 18 years of age or older.
B. Every adult is presumed capable of making medical treatment decisions. This includes the right to make "bad" decisions that the prehospital provider believes are not in the best interests of the patient.
C. A person is deemed to have decision-making capacity if he/she has the ability to provide informed consent, i.e., the patient:
    1. Understands the nature of the illness/injury or risk of injury/illness
    2. Understands the possible consequences of delaying treatment and/or refusing transport
    3. Given the risks and options, the patient voluntarily refuses or accepts treatment and/or transport.
D. A call to 9-1-1 itself does not prevent a patient from refusing treatment. A patient may refuse medical treatment (IVs, oxygen, medications), but you should try to inform the patient of the need for therapies, offer again, and treat to the extent possible.
E. The odor of alcohol on a patient's breath does not, by itself, prevent a patient from refusing treatment.
F. **Implied Consent:** An unconscious adult is presumed to consent to treatment for life-threatening injuries/illnesses.
G. **Involuntary Consent:** a person other than the patient in rare circumstances may authorize Consent. This may include a court order (guardianship), authorization by a law enforcement officer for prisoners in custody or detention, or for persons under a mental health hold or commitment who are a danger to themselves or others or are gravely disabled.

Procedure: Adults

A. Consent may be inferred by the patient's actions or by express statements. If you are not sure that you have consent, clarify with the patient or **CONTACT BASE**. This may include consent for treatment decisions or transport/destination decisions.
B. Determining whether or not a patient has decision-making capacity to consent or refuse medical treatment in the prehospital setting can be very difficult. Every effort should be made to determine if the patient has decision-making capacity, as defined above.
C. For patients who do not have decision-making capacity, **CONTACT BASE**.
D. If the patient lacks decision-making capacity and the patient's life or health is in danger, and there is no reasonable ability to obtain the patient's consent, proceed with transport and treatment of life-threatening injuries/illnesses. If you are not sure how to proceed, **CONTACT BASE**.
E. For patients who refuse medical treatment, if you are unsure whether or not a situation of involuntary consent applies, **CONTACT BASE**.

General Principles: Minors

A. A parent, including a parent who is a minor, may consent to medical or emergency treatment of his/her child. There are exceptions:
    1. Neither the child nor the parent may refuse medical treatment on religious grounds if the child is in imminent danger as a result of not receiving medical treatment, or when the child is in a life-threatening situation, or when the condition will result in serious handicap or disability.
    2. The consent of a parent is not necessary to authorize hospital or emergency

health care when an EMT in good faith relies on a minor's consent, if the minor is at least 15 years of age and emancipated or married.

3. Minors may seek treatment for abortion, drug addiction, and venereal disease without consent of parents. Minors > 15 years may seek treatment for mental health.

B. When in doubt, your actions should be guided by what is in the minor's best interests and base contact.

Procedure: Minors

A. A parent or legal guardian may provide consent to or refuse treatment in a non- life-threatening situation.
B. When the parent is not present to consent or refuse:
    1. If a minor has an injury or illness, but not a life-threatening medical emergency, you should attempt to contact the parent(s) or legal guardian. If this cannot be done promptly, transport.
    2. If the child does not need transport, they can be left at the scene in the custody of a responsible adult (e.g., teacher, social worker, grandparent). It should only be in very rare circumstances that a child of any age is left at the scene if the parent is not also present.
    3. If the minor has a life-threatening injury or illness, transport and treat per protocols. If the parent objects to treatment, **CONTACT BASE** immediately and treat to the extent allowable, and notify police to respond and assist.

PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

Purpose

A. To provide guidelines for prehospital personnel who encounter a physician at the scene of an emergency

General Principles

A. The prehospital provider has a duty to respond to an emergency, initiate treatment, and conduct an assessment of the patient to the extent possible.
B. A physician who voluntarily offers or renders medical assistance at an emergency scene is generally considered a "Good Samaritan." However, once a physician initiates treatment, he/she may feel a physician-patient relationship has been established.
C. Good patient care should be the focus of any interaction between prehospital care providers and the physician.

Procedure

A. See algorithm below and sample note to physician at the scene

Special notes

A. Every situation may be different, based on the physician, the scene, and the condition of the patient.
B. **CONTACT BASE** when any question(s) arise.

Physician at the Scene/Medical Direction Note

NOTE TO PHYSICIANS ON INVOLVEMENT WITH EMS PROVIDERS

THANK YOU FOR OFFERING YOUR ASSISTANCE.

The prehospital personnel at the scene of this emergency operate under standard policies, procedures, and protocols developed by their Medical Director. The drugs carried and procedures allowed are restricted by law and written protocols.

After identifying yourself by name as a physician licensed in the State of Colorado and providing identification, you may be asked to assist in one of the following ways:

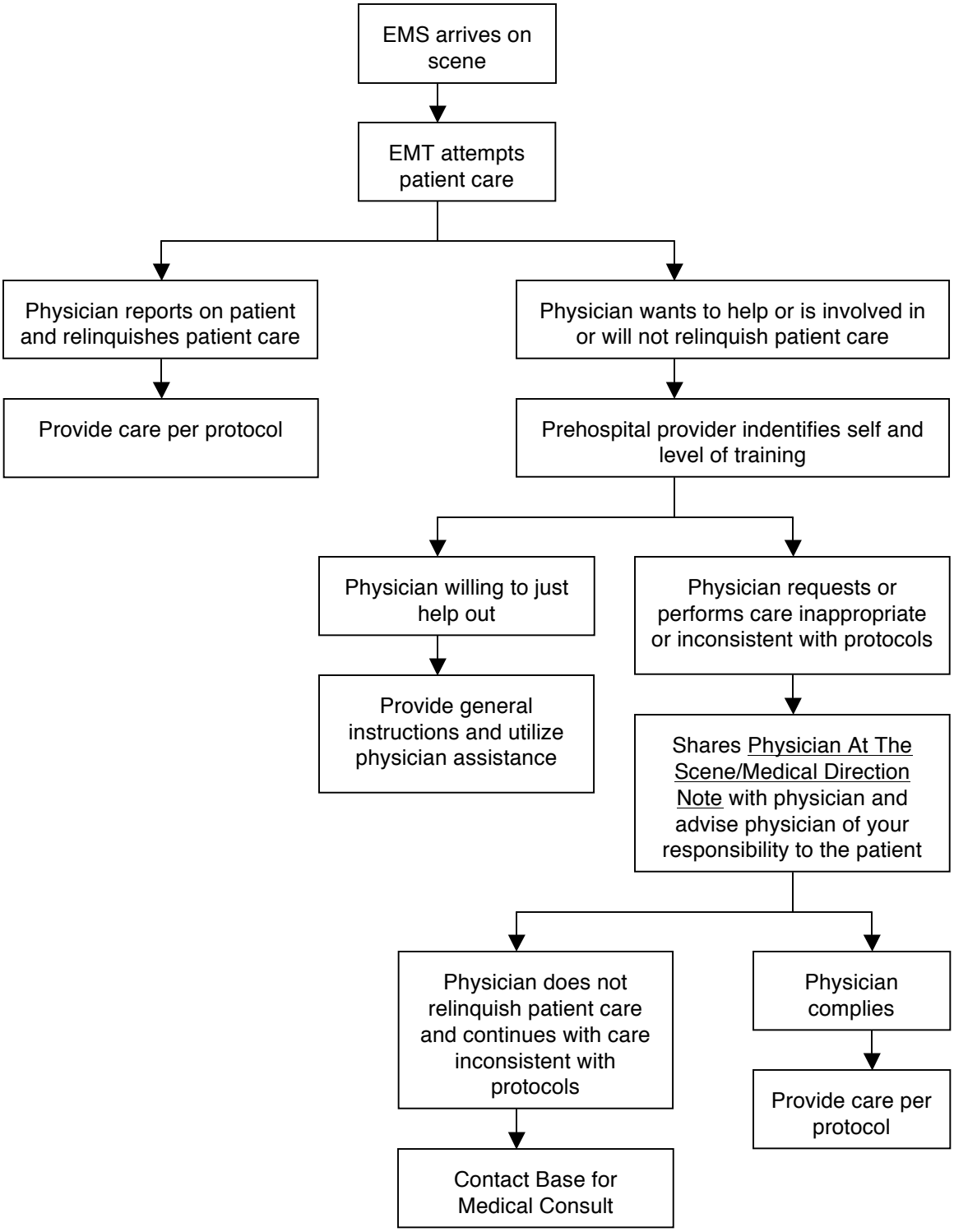
1. Offer your assistance or suggestions, but the prehospital care providers will remain under the medical control of their **base** physician, or
2. With the assistance of the prehospital care providers, talk directly to the **base physician** and offer to direct patient care and accompany the patient to the receiving hospital. Prehospital care providers are required to obtain an order directly from the **base physician** for this to occur.

THANK YOU FOR OFFERING YOUR ASSISTANCE DURING THIS EMERGENCY.

_____ _____

Medical Director Agency

PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM



0005 GENERAL GUIDELINES: TERMINATION OF RESUSCITATION AND FIELD PRONOUNCEMENT GUIDELINES

Purpose

A. To provide guidelines for resuscitation and field pronouncement of patients in cardiac arrest in the prehospital setting

General Principles

A. Agency policy determines base contact requirements for patients for whom resuscitative efforts are being withheld.
B. Attempt resuscitation for all patients found pulseless and apneic, unless any of the following are present:
    1. Physician orders as specified on the Colorado Medical Orders for Scope of Treatment (MOST) form: "No CPR. Do Not Resuscitate/DNR/Allow Natural Death", present with the patient
    2. A valid CPR directive present with the patient
    3. Dependent lividity or rigor mortis
    4. Decomposition
    5. Decapitation
    6. Evidence of massive blunt head, chest, or abdominal trauma
    7. Third degree burns over more than 90% of the total body surface area

Termination of Resuscitation (TOR)

A. All cases described below require contact with a base physician to approve termination of resuscitation (TOR).
    1. **Blunt Trauma Arrest**:
        a. Contact Base for TOR if patient found apneic and pulseless and no response to BLS care including chest compressions and bag valve mask ventilations.
    2. **Penetrating Trauma Arrest**:
        a. Resuscitate and transport to a trauma facility.
            i. If time of arrest suspected to be > 10 minutes, and no signs of life or response to BLS care (as above), consider base contact for TOR.
    3. **Medical Pulseless Arrest**:
        a. Resuscitate according to Universal Pulseless Arrest Algorithm on scene (unless unsafe) until one of the following end-points met:
            i. Return of spontaneous circulation (ROSC).
            ii. No ROSC despite 15 minutes of provision of ALS care or BLS care with an AED. If shockable rhythm still present, continue resuscitation and transport to closest emergency department.
            iii. Contact base for TOR at any point if continuous asystole for at least 15 minutes in any patient despite adequate CPR with ventilation and no reversible causes have been identified.
        b. For BLS-only providers, contact Base for TOR when all of the following criteria met:
            i. No AED shock advised
            ii. No ROSC
            iii. Arrest unwitnessed by either EMS or bystanders
            iv. No bystander CPR before EMS arrival
        c. The following patients found pulseless and apneic could warrant resuscitation efforts beyond 30 minutes and should be transported:
            i. Hypothermia
            ii. Lightning strike
            iii. Drowning with hypothermia and submersion < 60 minutes
            iv. Pregnant patient with estimated gestational age ≥ 20 weeks

4. After pronouncement, do not alter condition in any way or remove equipment (lines, tubes, etc.), as the patient is now a potential coroner's case.

0006 GENERAL GUIDELINES: ADVANCED MEDICAL DIRECTIVES

Advance Medical Directives

A. These guidelines apply to both adult and pediatric patients.
B. There are several types of advance medical directives (documents in which a patient identifies the treatment to be withheld in the event the patient is unable to communicate or participate in medical treatment decisions).
C. Some patients may have specific physician orders on a Colorado Medical Orders for Scope of Treatment (MOST) form. A MOST form order to withhold CPR or resuscitation should be honored by EMS.
D. Resuscitation may be withheld from, or terminated for, a patient who has a valid CPR Directive, Do Not Resuscitate Order (DNR), or other advance medical directive when:
    1. It is clear to the prehospital provider from the document that resuscitation is refused by the patient or by the patient's attending physician who has signed the document; and
    2. Base physician has approved withholding of or ceasing resuscitation.
E. Suspected suicide does not necessarily negate an otherwise valid CPR Directive, DNR order or other advanced medical directive. **CONTACT BASE**
F. The **Colorado CPR Directive** directs EMS providers to withhold CPR in the event of cardiac or respiratory arrest or malfunction.
    1. “Cardiopulmonary Resuscitation” (CPR) means measures to restore cardiac function or to support breathing in the event of cardiac or respiratory arrest or malfunction. “CPR” includes, but is not limited to, artificial ventilation, chest compression, delivering electric shock, placing tubes in the airway to assist breathing or other basic and advanced resuscitative therapies.
    2. CPR Directive bracelet or necklace may be used by an individual and shall be complied with in the same manner as a written CPR Directive.
    3. A signed CPR directive form that has been photocopied, scanned, faxed is valid.
G. A Living Will ("Declaration as to Medical or Surgical Treatment") requires a patient to have a terminal condition, as certified in the patient's hospital chart by two physicians.
H. Other types of advance directives may be a "Durable Medical Power of Attorney," or "Health Care Proxy". Each of these documents can be very complex and require careful review and verification of validity and application to the patient's existing circumstances. Therefore, the consensus is that resuscitation should be initiated until a physician can review the document or field personnel can discuss the patient’s situation with the base physician. **If there is disagreement at the scene about what should be done, CONTACT BASE for guidance.**
I. Verbal DNR "orders" are not to be accepted by the prehospital provider. In the event family or an attending physician directs resuscitation be ceased, the prehospital provider should immediately **CONTACT BASE**. The prehospital provider should accept verbal orders to cease resuscitation only from the **Base physician**.
J. There may be times in which the prehospital provider feels compelled to perform or continue resuscitation, such as a hostile scene environment, family members adamant that "everything be done," or other highly emotional or volatile situations. In such circumstances, the prehospital provider should attempt to confer with the base for direction and if this is not possible, the prehospital provider must use his or her best judgment in deciding what is reasonable and appropriate, including transport, based on the clinical and environmental conditions, and establish base contact as soon as possible.

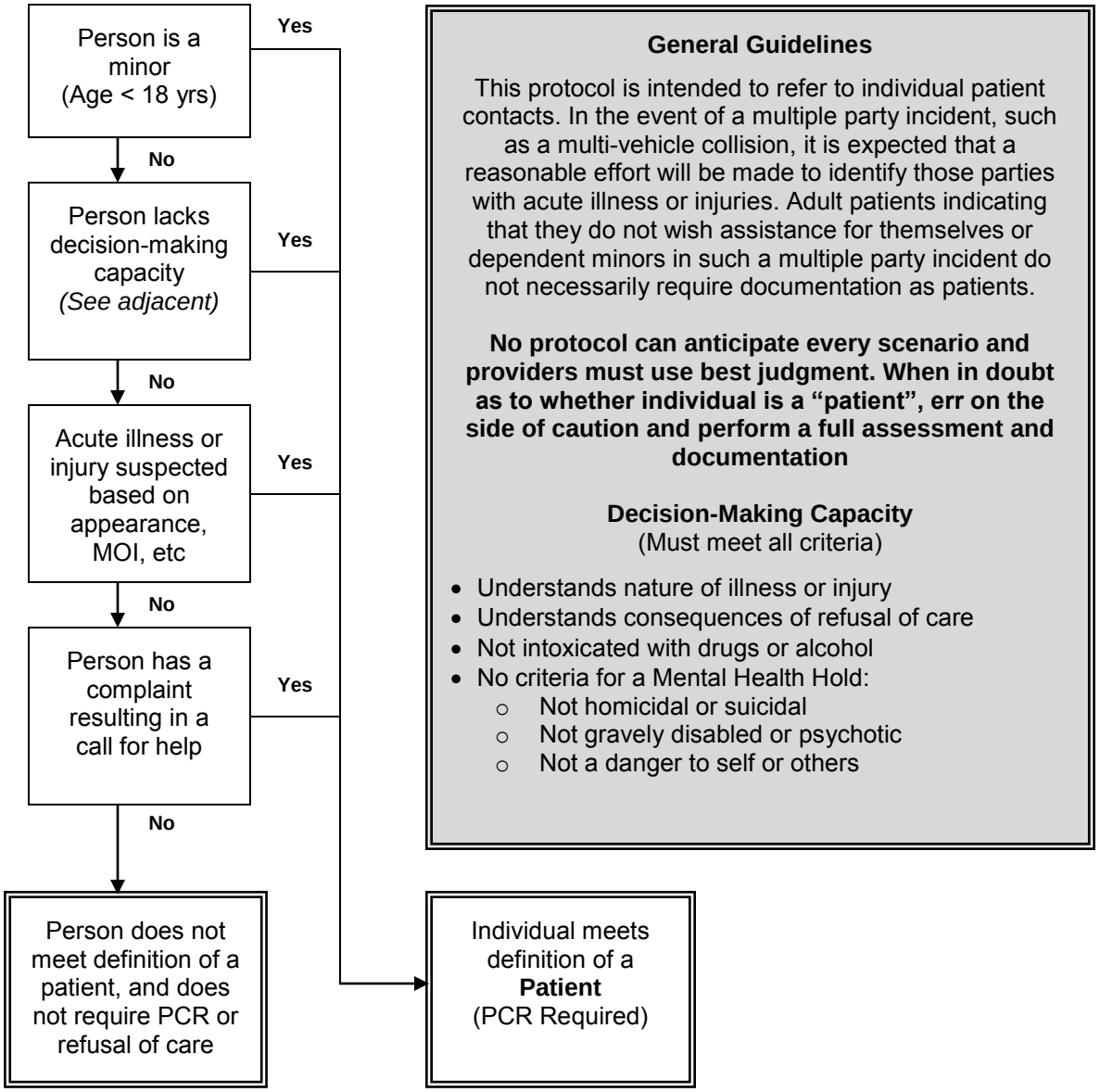
Additional Considerations:

A. Patients with valid DNR orders or advanced medical directives should receive supportive or comfort care, e.g. medication by any route, positioning and other measures to relieve

pain and suffering. Also the use of oxygen, suction and manual treatment of an airway obstruction as needed for comfort.

B. Mass casualty incidents are not covered in detail by these guidelines. (See Colorado State Unified Disaster Tag and Triage System: A Guide to MCI).
C. If the situation appears to be a potential crime scene, EMS providers should disturb the scene as little as possible and communicate with law enforcement regarding any items that are moved or removed from the scene.
D. Mechanisms for disposition of bodies by means other than EMS providers and vehicles should be prospectively established in each county or locale.
    1. In all cases of unattended deaths occurring outside of a medical facility, the coroner should be contacted immediately.

0007 GENERAL GUIDELINES: PATIENT DETERMINATION: "*PATIENT OR NO PATIENT*"



General Guidelines

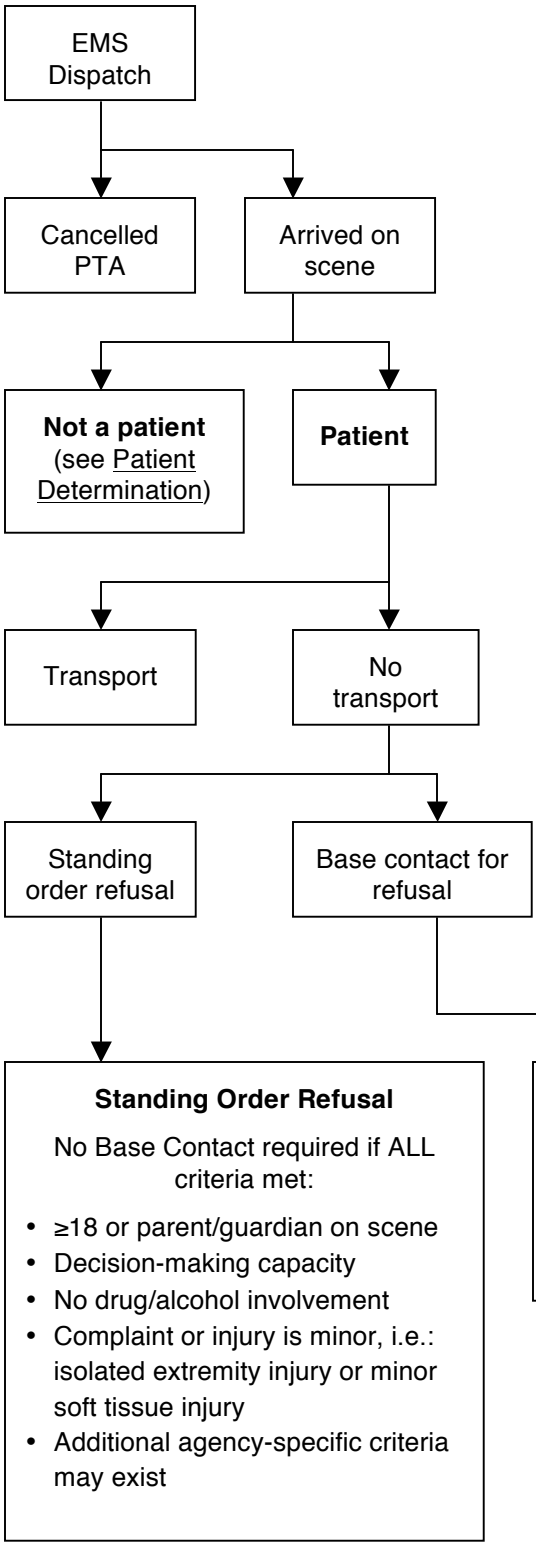
This protocol is intended to refer to individual patient contacts. In the event of a multiple party incident, such as a multi-vehicle collision, it is expected that a reasonable effort will be made to identify those parties with acute illness or injuries. Adult patients indicating that they do not wish assistance for themselves or dependent minors in such a multiple party incident do not necessarily require documentation as patients.

No protocol can anticipate every scenario and providers must use best judgment. When in doubt as to whether individual is a "patient", err on the side of caution and perform a full assessment and documentation

Decision-Making Capacity
(Must meet all criteria)

- Understands nature of illness or injury
- Understands consequences of refusal of care
- Not intoxicated with drugs or alcohol
- No criteria for a Mental Health Hold:
  - Not homicidal or suicidal
  - Not gravely disabled or psychotic
  - Not a danger to self or others

0008 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL



A person who has decision-making capacity may refuse examination, treatment and transport

A person has decision making capacity sufficient to refuse treatment and transport if he or she:

- Understands nature of illness or injury; and
- Understands the risks of refusing treatment or transport; and
- Given the risks and options, voluntarily refuses treatment or transport

Documentation Requirements for Refusal

- Confirm decision-making capacity
- EMS assistance offered and declined
- Risks of refusal explained to patient
- Patient understands risks of refusal
- Name of Base Station physician authorizing refusal of care unless standing order refusal
- Signed refusal of care against medical advise document, if possible

0009 GENERAL GUIDELINES: EMERGENCY DEPARTMENT DIVERT AND ADVISORY

Purpose

A. To provide a standard approach to ambulance diversion that is practical for field use
B. To facilitate unobstructed access to hospital emergency departments for ambulance patients
C. To allow for optimal destination policies in keeping with general EMS principles and Colorado State Trauma System Rules and Regulations

General Principles

A. *EMSystem*, an internet-based tracking system, is used to manage diversion in the Denver Metro area
B. The RETAC Trauma Triage Algorithms should be followed
C. The only time an ambulance can be diverted from a hospital is when that hospital is posted on EMSystem as being on official divert (RED) status.
D. Overriding factors: the following are appropriate reasons for a paramedic to override ED Divert and, therefore, deliver a patient to an emergency department that is on ED divert:
    1. Cardiopulmonary arrest
    2. Imminent cardiopulmonary arrest
    3. Unmanageable airway emergencies
    4. Unstable trauma and burn patients transported to Level I and Level II Trauma Centers
    5. Patients meeting “Cardiac Alert“ criteria (participating hospitals)
    6. Patients meeting “Stroke Alert“ criteria (participating hospitals)
    7. Imminent delivery
E. Prehospital personnel should honor advisory categories, when possible, considering patient’s condition, travel time, and weather. Patients with specific problems that fall under an advisory category should be transported to a hospital not on that specific advisory when feasible.
F. There are several categories that are considered advisory (yellow) alert categories. These categories are informational only and should alert field personnel that a hospital listed as being on an advisory alert may not be able to optimally care for a patient that falls under that advisory category.
G. The following are advisory (yellow) categories recognized by the State. Individual facilities may not utilize these categories often, or ever:
    1. ICU (Intensive Care Unit)
    2. Psych (Psychiatric)
H. Zone saturation exists when all hospitals within that zone are on ED Divert.
I. A Zone Master is the designated hospital within a Zone responsible for determining and tracking hospital assignments when the zone is saturated.
J. When an ambulance is transporting a patient that the paramedic feels cannot go outside the zone due to patient acuity or other concerns, the paramedic should contact the Zone Master and request a destination assignment.
K. In general, patients contacted within a zone should be transported to an appropriate facility within the zone. Patients may be transported out of the primary zone at the paramedic’s discretion, if it is in the patient’s best interest or if the transport to an appropriate facility is shorter.
L. The zones, hospitals in each zone, Zone Masters, and the Zone Master contact phone numbers are listed on *EMSystem.*

0010 GENERAL GUIDELINES: MANDATORY REPORTING OF ABUSE PATIENTS

Purpose

A. To provide guidelines for the reporting of suspected abuse patients.

General Principles

A. At-risk adult or pediatric patients who are suspected to be victims of abuse or exploitation, as defined in State Statute and Rule, should be reported to the law enforcement agency with jurisdiction where the abuse occurred.

B. If unclear which law enforcement agency has jursidicition report the abuse to your county sheriff's department.

C. Obtain the law enforcement case number from the officer taking the report. Document that you reported the suspected abuse, the name of the officer, the agency he/she works for, and the law enforcement case number in your patient care report. Do not provide any additional in regarding the abuse in your patient care report; all this information should provided to the law enforcement officer and noted in the law enforcement report.

D. Your agency may have addtional requirements for reporting case of abuse. Be sure reporting is occurring in a manner consistent with your agency's guidelines/procedures.

0100 PROCEDURE PROTOCOL: OROTRACHEAL INTUBATION

EMT-I	Paramedic

Indications:

- Respiratory failure
- Absence of protective airway reflexes
- Present or impending complete airway obstruction
- Anticipated prolonged need for positive pressure ventilation

Contraindications:

- There are no absolute contraindications. However, in general the primary goals of airway management are adequate oxygenation and ventilation, and these should be achieved in the least invasive manner possible
    - Orotracheal intubation is associated with worse outcomes among pediatric patients and head injured patients when compared to BLS airway maneuvers. Therefore, it is relatively contraindicated in these populations
    - Intubation is associated with interruptions in chest compressions during CPR, which is associated with worse patient outcomes. Additionally, intubation itself has not been shown to improve outcomes in cardiac arrest

Technique:

1. Initiate BLS airway sequence
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment and position patient:
    a. If trauma: have assistant hold in-line spinal immobilization in neutral position
    b. If no trauma, sniffing position or slight cervical hyperextension is preferred
4. Perform laryngoscopy
    a. To improve laryngeal view, use right hand to manipulate larynx, or have assistant apply backwards, upwards, rightward pressure (BURP)
5. Place ETT. Confirm tracheal location and appropriate depth and secure tube
    a. Correct tube depth may be estimated as 3 times the internal diameter of tube at teeth or gums (e.g: 7.0 ETT is positioned at 21 cm at teeth)
6. Confirm and document tracheal location by:
    a. Visualization of tube insertion between vocal cords with direct or video laryngoscopy
    b. $ETCO_2$
    c. Presence and symmetry of breath sounds
    d. Rising SpO_2
    e. Other means as needed
7. Ventilate with BVM. Assess adequacy of ventilations
8. During transport, continually reassess ventilation, oxygenation and tube position with continuous $ETCO_2$ and SpO_2

Precautions:

- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
    - **D**islodgement
    - **O**bstruction
    - **P**neumothorax
    - **E**quipment failure (no oxygen)
- Reconfirm and document correct tube position after moving patient and before disconnecting from monitor in ED
- Unsuccessful intubation does not equal failed airway management. Many patients cannot be intubated without paralytics. Use King airway or BVM ventilations if 2 attempts at intubation unsuccessful.

Approved by Denver Metro EMS Medical Directors January 13, 2013. Next review July 2013

0110 PROCEDURE PROTOCOL: NASOTRACHEAL INTUBATION

Paramedic

Indications:

- Age ≥ 12 years spontaneously breathing patient with indication for intubation who cannot tolerate either supine position or laryngoscopy
- Present or impending airway obstruction
- Lack of protective airway reflexes
- Anticipated prolonged need for positive pressure ventilation

Contraindications:

- Apnea
- Relative contraindication - Severe mid-face trauma

Technique:

1. Initiate BLS airway sequence
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment, choose correct ETT size (usually 7.0 in adult, limit is size of naris)
4. Position patient with head in midline, neutral position
5. If trauma: cervical collar may be in place, or assistant may hold in-line stabilization in neutral position
6. If no trauma, patient may be sitting upright
7. Administer phenylephrine nasal drops in each nostril
8. Lubricate ETT with Lidocaine jelly or other water-soluble lubricant
9. With gentle steady pressure, advance the tube through the nose to the posterior pharynx. Use the largest nostril. Abandon procedure if significant resistance is felt
10. Keeping the curve of the tube exactly in midline, continue advancing slowly
11. There will be slight resistance just before entering trachea. Wait for an inspiratory effort before final passage through cords. Listen for loss of breath sounds
12. Continue advancing tube until air is definitely exchanging through tube, then advance 2 cm more and inflate cuff
13. Note tube depth and tape securely
14. Confirm and document endotracheal location by:
    a. $ETCO_2$
    b. Presence and symmetry of breath sounds
    c. Rising SpO_2
    d. Other means as needed
15. Ventilate with BVM. Assess adequacy of ventilations
16. During transport, continually reassess ventilation, oxygenation and tube position with continuous $ETCO_2$ and SpO_2

Precautions:

- Before performing BNTI, consider if patient can be safely ventilated with non-invasive means such as CPAP or BVM
- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
    - **D**islodgement
    - **O**bstruction
    - **P**neumothorax
    - **E**quipment failure (no oxygen)
- Reconfirm and document correct tube position after moving patient and before disconnecting from monitor in ED
- Blind nasotracheal intubation is a very gentle technique. The secret to success is perfect positioning and patience.

Approved by Denver Metro EMS Medical Directors January 13, 2013. Next review July 2013

0120 PROCEDURE PROTOCOL: PERCUTANEOUS CRICOTHYROTOMY

Paramedic

Introduction:

- Percutaneous cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The reason for performing this procedure must be documented and submitted for review to the EMS Medical Director within 24 hours.

Indications:

- A life-threatening condition exists AND advanced airway management is indicated, ***AND*** adequate oxygenation and ventilation cannot be accomplished by other less invasive means.

Contraindications:

- Anterior neck hematoma is a relative contraindication
- Age < 12 is a relative contraindication

Technique:

1. Prepare skin using aseptic solution
2. Position the patient in a supine position, with in-line spinal immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view
3. Perform cricothyrotomy according to manufacturer's instructions for selected device
4. Confirm and document tube placement by:
    a. $ETCO_2$
    b. Breath sounds
    c. Rising pulse oximetry
    d. Other means as needed
5. Ventilate with BVM assessing adequacy of ventilation
6. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
7. Secure tube with tube ties or device
8. Continually reassess ventilation, oxygenation and tube placement

Precautions:

- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage

Approved by Denver Metro EMS Medical Directors January 13, 2013. Next review July 2013

0121 PROCEDURE PROTOCOL: BOUGIE ASSISTED SURGICAL CRICOTHYROTOMY

Paramedic

Introduction:

- Surgical cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The reason for performing this procedure must be documented and submitted for review to the EMS Medical Director within 24 hours. Surgical cricothyrotomy is to be performed only by paramedics trained in this procedure.
- An endotracheal tube introducer ("bougie") facilitates this procedure and has the advantage of additional confirmation of tube position and ease of endotracheal tube placement. If no bougie is available the procedure may be performed without a bougie by introducing endotracheal tube or tracheostomy tube directly into cricothyroid membrane.
- Given the rarity and relative unfamiliarity of this procedure it may be helpful to have a medical consult on the phone during the procedure. Consider contacting base for all cricothyroidotomy procedures. Individual Medical Directors may mandate base contact before initiating the procedure. Individual agency policy and procedures apply and providers are responsible for knowing and following these policies.

Indications:

- A life-threatening condition exists AND advanced airway management is indicated ***AND*** you are unable to establish an airway or ventilate the patient by any other means.

Contraindications:

- Age < 12 years: for children a percutaneous needle cricothryrotomy with large angiocath is preferred surgical airway for anatomic reasons

Technique:

1. Position the patient supine, with in-line spinal immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.
2. Using an aseptic technique (betadine/alcohol wipes), cleanse the area.
3. Standing on the left side of the patient, stabilize the larynx with the thumb and middle finger of your left hand, and identify the cricothyroid membrane, typically 4 finger-breadths below mandible
4. Using a scalpel, make a 3 cm centimeter vertical incision 0.5 cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make a horizontal incision through the cricothyroid membrane with the scalpel blade oriented caudal and away from the cords.
6. Insert the bougie curved-tip first through the incision and angled towards the patient's feet
    a. If no bougie available, use tracheal hook instrument to lift caudal edge of incision to facilitate visualization and introduction of ETT directly into trachea and skip to # 9.
7. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hangup" when it cannot be advanced any further. This confirms tracheal position.
8. Advance a 6-0 endotracheal tube over the bougie and into the trachea. It is very easy to place tube in right mainstem bronchus, so carefully assess for symmetry of breath sounds. Remove bougie while stabilizing ETT ensuring it does not become dislodged
9. Ventilate with BVM and 100% oxygen

10. Confirm and document tracheal tube placement as with all advanced airways: $ETCO_2$ as well as clinical indicators e.g.: symmetry of breath sounds, rising pulse oximetry, etc.
11. Secure tube with ties.
12. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
13. Continually reassess ventilation, oxygenation and tube placement.

Precautions:

- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage from the carotid or jugular vessels, or their branches.

0130 PROCEDURE PROTOCOL: KING AIRWAY

EMT	AEMT	EMT-I	Paramedic

Indications:

- Rescue airway if unable to intubate a patient in need of airway protection
- Primary airway if intubation anticipated to be difficult and rapid airway control is necessary
- Primary airway in pulseless arrest, when attempts at intubation are likely to interrupt CPR
- Designated advanced airway for EMTs
- #2 and #2.5 to be used in **Cardiac Arrest Only**

Contraindications:

- Intact gag reflex
- Caustic ingestion

Technique

1. Initiate BLS airway sequence
2. Select proper size King airway based on patient height:
    a. 35”-45” tall = #2
    b. 41”-51” tall = #2.5
    c. 4’-5’ tall = #3
    d. 5’-6’ tall = #4
    e. > 6’ tall = #5
3. Assemble equipment, note correct volume for inflation marked on tube itself, test balloon for leaks, lubricate posterior aspect distal tip with water-soluble lubricant (included)
4. Suction airway and pre-oxygenate with BVM ventilations, if possible
5. If trauma: have assistant hold in-line spinal immobilization in neutral position
6. If no trauma, sniffing position or slight cervical hyperextension is preferred
7. Hold King tube in dominant hand at the connector. With other hand, open mouth and lift chin
8. Rotate King tube so blue index line is facing corner of mouth
9. Introduce tip into mouth and advance airway behind tongue into the hypopharynx
10. As tube passes tongue, rotate King so that blue index line is again facing the chin
11. Without excessive force, advance King so that base is aligned with teeth or gums
12. Using supplied syringe, inflate cuff balloon with correct volume of air (marked on King tube):
    a. Size 2 = 25-35 mL
    b. Size 2.5 = 30-40 mL
    c. Size 3 = 50 mL
    d. Size 4 = 70 mL
    e. Size 5 = 80 mL
13. Attach bag to King and begin ventilating patient. While bagging, slowly and slightly withdraw King until ventilations are easy and chest rise is adequate
14. Confirm tube placement by auscultation, chest movement, and $ETCO_2$
15. Monitor patient for vomiting and aspiration
16. Continuously monitor $ETCO_2$, SpO_2, vital signs

Precautions:

1. If patient < 4’ tall, an appropriately sized pediatric King tube must be used *(At the time of this version of Denver Metro Protocol, Pediatric King tubes are by waiver only)*
2. Use with caution in patients with broken teeth, which may lacerate balloon
3. Use with caution in patients with known esophageal disease
4. Do not remove a properly functioning King tube in order to attempt intubation

Approved by Denver Metro EMS Medical Directors January 1, 2013. Next review July 2013

0140 PROCEDURE PROTOCOL: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

EMT	AEMT
EMT-I	Paramedic

Indications:

- Symptomatic patients with moderate-to-severe respiratory distress as evidenced by at least two (2) of the following:
  - Rales (crackles)
  - Dyspnea with hypoxia ($SpO_2 < 90\%$ despite O_2)
  - Dyspnea with verbal impairment – i.e. cannot speak in full sentences
  - Accessory muscle use
  - Respiratory rate > 24/minute despite O_2
  - Diminished tidal volume

Contraindications:

- Respiratory or cardiac arrest
- Systolic BP < 90mmHg
- Lack of airway protective reflexes
- Significant altered level of consciousness such that unable to follow verbal instructions or signal distress
- Vomiting or active upper GI bleed
- Suspected pneumothorax
- Trauma
- Patient size or anatomy prevents adequate mask seal

Technique:

1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR, SpO_2, and $ETCO_2$)
3. Apply the CPAP mask and secure with provided straps, progressively tightening as tolerated to minimize air leak
4. Operate CPAP device according to manufacturer specifications
5. For oxygen flow driven devices such as Boussignac device:
   a. Adjust oxygen flow to 15 Lpm initially. Monitor patient continuously, recording vital signs every 5 minutes
   b. Start with the lowest continuous pressure that appears to be effective. Adjust pressure following manufacturer instructions to achieve the most stable respiratory status utilizing the signs described below as a guide
6. Assess patient for improvement as evidenced by the following:
   a. Reduced dyspnea
   b. Reduced verbal impairment, respiratory rate and heart rate
   c. Increased SpO_2
   d. Stabilized blood pressure
   e. Appropriate $ETCO_2$ values and waveforms
   f. Increased tidal volume
7. Observe for signs of deterioration or failure of response to CPAP:
   a. Decrease in level of consciousness
   b. Sustained or increased heart rate, respiratory rate or increased blood pressure
   c. Sustained low or decreasing SpO_2 readings
   d. Rising $ETCO_2$ levels or other $ETCO_2$ evidence of ventilatory failure
   e. Diminished or no improvement in tidal volume

Precautions:

- Should patient deteriorate on CPAP:
  - Troubleshoot equipment
  - Consider endotracheal intubation
  - Assess need for possible chest decompression due to pneumothorax
  - Assess for possibility of hypotension due to significantly reduced preload from positive pressure ventilation
- In-line nebulized medications may be given during CPAP as indicated and in accordance with manufacturer guidelines

Approved by Denver Metro EMS Medical Directors July 1, 2013. Next review January 2014

0150 PROCEDURE PROTOCOL: CAPNOGRAPHY

EMT	AEMT	EMT-I	Paramedic

Indications:

- MANDATORY: to rule out esophageal intubation and confirm endotracheal tube position in all intubated patients.
- To identify late endotracheal tube dislodgement
- To monitor ventilation and perfusion in any ill or injured patient

Contraindications:

- None

Technique:

1. In patient with ETT or advanced airway: place $ETCO_2$ detector in-line between airway adaptor and BVM after airway positioned and secured
2. Patients without ETT or advanced airway in place: place $ETCO_2$ cannula on patient. May be placed under CPAP or NRB facemask
3. Assess and document both capnography waveform and $ETCO_2$ value

Precautions:

1. To understand and interpret capnography, remember the 3 determinants of $ETCO_2$:
    a. Alveolar ventilation
    b. Pulmonary perfusion
    c. Metabolism
2. Sudden loss of $ETCO_2$:
    a. Tube dislodged
    b. Circuit disconnected
    c. Cardiac arrest
3. High $ETCO_2$ (> 45)
    a. Hypoventilation/CO_2 retention
4. Low $ETCO_2$ (< 25)
    a. Hyperventilation
    b. Low perfusion: shock, PE, sepsis
5. Cardiac Arrest:
    a. In low-pulmonary blood flow states, such as cardiac arrest, the primary determinant of $ETCO_2$ is blood flow, so $ETCO_2$ is a good indicator of quality of CPR
    b. If $ETCO_2$ is dropping, change out person doing chest compressions
    c. In cardiac arrest, if $ETCO_2$ not > 10 mmHg after 20 minutes of good CPR, this likely reflects very low CO_2 production (dead body) and is a 100% predictor of mortality

0160 PROCEDURE PROTOCOL: SYNCHRONIZED CARDIOVERSION

Unstable tachyarrhythmia with a pulse

↓

Check:
- O_2 via NRB facemask
- Functioning IV line
- Suction
- Advanced airway equipment ready

↓

Sedate with benzodiazepine whenever possible

↓

Perform Synchronized Cardioversion
- Use 200 Joules biphasic in adults and 1-2 Joules/kg in children < 12 years old

↓

Continue treatment according to Tachycardia with a Pulse protocol

This procedure protocol applies to conscious, alert patients with signs of poor perfusion due to tachyarrhythmia in whom synchronized cardioversion is indicated according to Tachyarrhythmia with Pulse protocol

Paramedic

Precautions:
- If rhythm is AV nodal reentrant tachycardia (AVNRT, historically referred to as “PSVT”) it is preferred to attempt a trial of adenosine prior to electrical cardioversion, even if signs of poor perfusion are present, due to rapid action of adenosine
- If defibrillator does not discharge in “synch” mode, then deactivate “synch” and reattempt
- If sinus rhythm achieved, however briefly, then dysrhythmia resumes immediately, repeated attempts at cardioversion at higher energies are unlikely to be helpful. First correct hypoxia, hypovolemia, etc. prior to further attempts at cardioversion
- If pulseless, treat according to Universal Pulseless Arrest Algorithm
- Chronic atrial fibrillation is rarely a cause of hemodynamic instability, especially if rate is < 150 bpm. First correct hypoxia, hypovolemia, before considering cardioversion of chronic atrial fibrillation, which may be difficult, or impossible and poses risk of stroke
- Sinus tachycardia rarely exceeds 150 bpm in adults or 220 bpm in children < 8 years and does not require or respond to cardioversion. Treat underlying causes.
- Transient dysrhythmias or ectopy are common immediately following cardioversion and rarely require specific treatment other than supportive care

Approved by Denver Metro EMS Medical Directors January 13, 2013. Next review July 2013

0170 PROCEDURE PROTOCOL: TRANSCUTANEOUS CARDIAC PACING

EMT-I	Paramedic

Indications

1. Symptomatic bradyarrhythmias (includes A-V block) not responsive to medical therapy

Precautions

1. Conscious patient will experience discomfort; consider sedation with benzodiazepine if blood pressure allows.

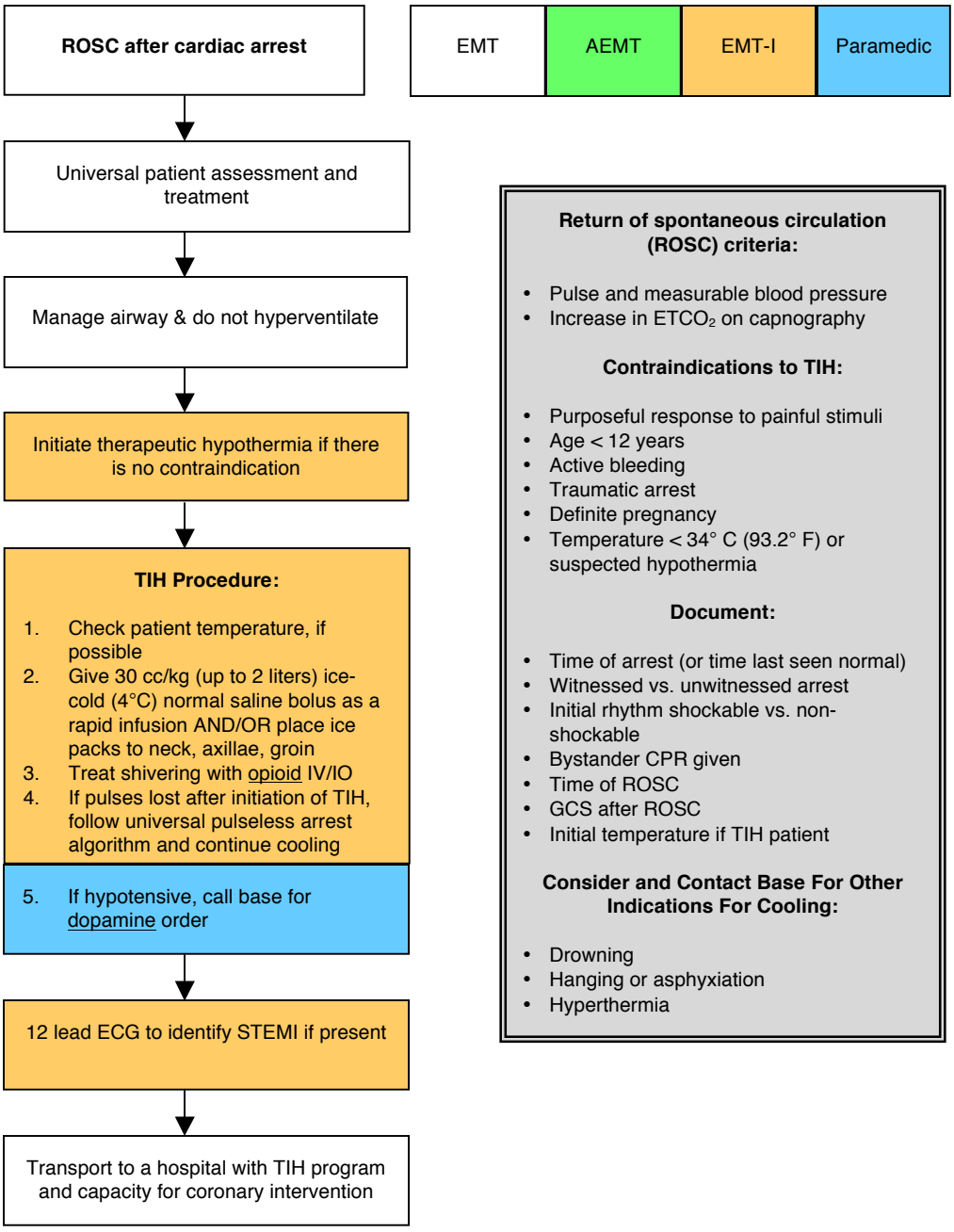
Technique

1. Apply electrodes as per manufacturer specifications: (-) left anterior, (+) left posterior.
2. Turn pacer unit on.
3. Set initial current to 40 mAmps .
4. Select pacing rate at 80 beats per minute (BPM)
5. Start pacing unit.
6. Confirm that pacer senses intrinsic cardiac activity by adjusting ECG size.
7. Increase current 10 mAmps every 10-15 seconds until capture or 200 mAmps (usually captures around 100 mAmps).
8. If there is electrical capture, check for femoral pulse.
9. If no capture occurs with maximum output, discontinue pacing and resume ACLS.
10. If there are no pulses with capture treat PEA

Complications

1. Ventricular fibrillation and ventricular tachycardia are rare complications, but follow appropriate protocols if either occur.
2. Pacing is rarely indicated in patients under the age of 12 years.
3. Muscle tremors may complicate evaluation of pulses, femoral pulse may be more accurate.
4. Pacing may cause diaphragmatic stimulation and apparent hiccups.
5. CPR is safe during pacing. A mild shock may be felt if direct active electrode contact is made.

0180 PROCEDURE PROTOCOL: THERAPEUTIC INDUCED HYPOTHERMIA AFTER CARDIAC ARREST



0190 PROCEDURE PROTOCOL: RESTRAINT PROTOCOL

EMT	AEMT
EMT-I	Paramedic

Indications:

A. Physical restraint of patients is permissible and encouraged if the patient poses a danger to him or herself or to others. Only reasonable force is allowable, i.e., the minimum amount of force necessary to control the patient and prevent harm to the patient or others. Try alternative methods first (e.g., verbal de-escalation should be used first if the situation allows).
B. **Paramedic:** Consider pharmacological treatment (sedation) of agitation in patients that require transport and are behaving in a manner that poses a threat to him or herself or others.
    1. See Agitated/Combative Patient Protocol: (The term "chemical restraint" is no longer preferred)
C. Restraints may be indicated for patients who meet the following criteria:
    1. A patient who is significantly impaired (e.g. intoxication, medical illness, injury, psychiatric condition, etc) and lacks decision-making capacity regarding his or her own care.
    2. A patient who exhibits violent, combative or uncooperative behavior who does not respond to verbal deescalation.
    3. A patient who is suicidal and considered to be a risk for behavior dangerous to his or herself or to healthcare providers.
    4. A patient who is on a mental health hold.

Precautions:

A. When appropriate, involve law enforcement if available
B. Restraints shall be used only when necessary to prevent a patient from seriously injuring him or herself or others (including the ambulance crew), and only if safe transportation and treatment of the patient cannot be accomplished without restraints. They may not be used as punishment, or for the convenience of the crew.
C. Any attempt to restrain a patient involves risk to the patient and the prehospital provider. Efforts to restrain a patient should only be done with adequate assistance present.
D. Be sure to evaluate the patient adequately to determine his or her medical condition, mental status and decision-making capacity.
E. Do not use hobble restraints and do not restrain the patient in the prone position or any position that is impairing the airway or breathing.
F. Search the patient for weapons.
G. Handcuffs are not appropriate medical restraints and should only be placed by law enforcement personnel. See Handcuff Protocol.

Technique:

A. Treat the patient with respect. Attempts to verbally reassure or calm the patient should be done prior to the use of restraints. To the extent possible, explain what is being done and why.
B. Have all equipment and personnel ready (restraints, suction, a means to promptly remove restraints).
C. Use assistance such that, if possible, 1 rescuer handles each limb and 1 manages the head or supervises the application of restraints.
D. Apply restraints to the extent necessary to allow treatment of, and prevent injury to, the patient. **Under-restraint may place patient and provider at greater risk**.
E. After application of restraints, check all limbs for circulation. During the time that a patient is in restraints, continuous attention to the patient's airway, circulation and vital signs in mandatory. A restrained patient may never be left unattended.

Documentation :

Approved by Denver Metro EMS Medical Directors January 13, 2013. Next review July 2013

Document the following in all cases of restraint:

A. Description of the facts justifying restraint
B. Efforts to de-escalate prior to restraint
C. Type of restraints used
D. Condition of the patient while restrained, including reevaluations during transport
E. Condition of the patient at the time of transfer of care to emergency department staff
F. Any injury to patient or to EMS personnel

Complications:

A. Aspiration: continually monitor patient's airway
B. Nerve injury: assess neurovascular status of patient's limbs during transport
C. Complications of medical conditions associated with need for restraint
    1. Patients may have underlying trauma, hypoxia, hypoglycemia, hyperthermia, hypothermia, drug ingestion, intoxication or other medical conditions
D. Excited Delirium Syndrome. This is a life-threatening medical emergency. These patients are truly out of control. They will have some or all of the following symptoms: paranoia, disorientation, hyper-aggression, hallucination, tachycardia, increased strength, and hyperthermia.

0200 PROCEDURE PROTOCOL: TOURNIQUET PROTOCOL

EMT	AEMT
EMT-I	Paramedic

Indications

A. A tourniquet may be used to control potentially fatal hemorrhage only after other means of hemorrhage control have failed.

Precautions

A. A tourniquet applied incorrectly can increase blood loss.
B. Applying a tourniquet can cause nerve and tissue damage whether applied correctly or not. Proper patient selection is of utmost importance.
C. Injury due to tourniquet is unlikely if the tourniquet is removed within 1 hour. In cases of life-threatening bleeding benefit outweighs theoretical risk.
D. A commercially made tourniquet is the preferred tourniquet. If none is available, a blood pressure cuff inflated to a pressure sufficient to stop bleeding is an acceptable alternative. Other improvised tourniquets are not allowed.

Technique

A. First attempt to control hemorrhage by using direct pressure over bleeding area.
B. If a discrete bleeding vessel can be identified, point pressure over bleeding vessel is more effective than a large bandage and diffuse pressure.
C. If unable to control hemorrhage using direct pressure, apply tourniquet according to manufacturer specifications and using the steps below:
    1. Cut away any clothing so that the tourniquet will be clearly visible. NEVER obscure a tourniquet with clothing or bandages.
    2. Apply tourniquet proximal to the wound and not across any joints.
    3. Tighten tourniquet until bleeding stops. Applying tourniquet too loosely will only increase blood loss by inhibiting venous return.
    4. Mark the time and date of application on the patient's skin next to the tourniquet.
    5. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.

0210 PROCEDURE PROTOCOL: NEEDLE THORACOSTOMY FOR TENSION PNEUMOTHORAX DECOMPRESSION

EMT-I	Paramedic

Indication:

A. Needle decompression of tension pneumothorax is a standing order for EMT-I and Paramedics.
B. **All** of the following clinical indicators must be present:
    1. Severe respiratory distress
    2. Hypotension
    3. Unilateral absent or decreased breath sounds

Technique:

A. Expose entire chest
B. Clean skin overlying site with available skin prep
C. Insert largest, longest available angiocath either at 2nd intercostal space at midclavicular line, or 5th intercostal space at midaxillary line
    1. Either approach is acceptable, generally the site with the least soft tissue overlying ribs is preferred
D. Notify receiving hospital of needle decompression attempt

Precautions:

A. Angiocath may become occluded with blood or by soft tissue
B. A simple pneumothorax is NOT an indication for needle decompression

0220 PROCEDURE PROTOCOL: INTRAOSSEUS CATHETER PLACEMENT

EMT-BIV only	AEMT
EMT-I	Paramedic

Indications (must meet all criteria):

A. Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness defined as:

******EMT-BIV ONLY UNDER DIRECT SUPERVISION FOR ARREST/EXTREMIS ONLY*****

1. Cardiopulmonary arrest or impending arrest
2. Profound shock with severe hypotension and poor perfusion

B. Utilization of IO access for all other patients requires base station contact
   1. E.g.: Hypoglycemia with severe symptoms (e.g. unresponsive) and no venous access

C. IO placement may be considered prior to peripheral IV attempts in critical patients without identifiable peripheral veins

Technique:

A. Site of choice – tibial plateau: 2 fingerbreadths below the tibial tuberosity on the anteromedial surface of tibia.
   1. Alternative sites (e.g. humeral head in adults) are device-specific and require authorization from the agency Medical Director.

B. Clean skin with povidone-iodine.
C. Place intraosseous needle perpendicular to the bone.
D. Follow manufacturer's guidelines specific to the device being used for insertion.
E. Entrance into the bone marrow is indicated by a sudden loss of resistance.
F. Flush line with 10 cc saline. Do not attempt to aspirate marrow
   a. If patient conscious, administer lidocaine for pain control before infusing any other fluids

G. Secure line
   1. Even if properly placed, the needle will not be secure. The needle must be secured and the IV tubing taped. The IO needle should be stabilized at all times.

H. Observe for signs of limb swelling, decreased perfusion to distal extremity that would indicate a malpositioned IO catheter or other complication. If limb becomes tense or malperfused, disconnect IO tubing immediately and leave IO in place.
I. A person should be assigned to monitor the IV at the scene and en route to the hospital.
J. Do not make more than one IO placement attempt per bone.
K. Do not remove IO needles in the field.
L. Notify hospital staff of all insertion sites/attempts and apply patient wristband included with kit to identify IO patient.

Complications:

A. Fracture
B. Compartment syndrome
C. Infection

Contraindications:

A. Fracture of target bone
B. Cellulitis (skin infection overlying insertion site)
C. Osteogenesis imperfecta (rare condition predisposing to fractures with minimal trauma)
D. Total knee replacement (hardware will prevent placement)

Side Effects and Special Notes:

A. Some authorities recommend aspiration of marrow fluid or tissue to confirm needle location. This is not recommended for field procedures, as it increases the risk of plugging the needle.

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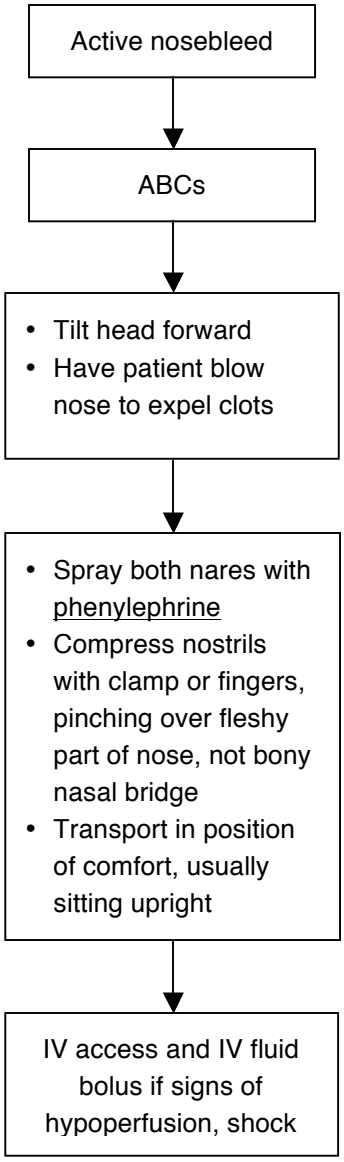
B. Expect flow rates to be slower than peripheral IVs. Pressure bags may be needed. Any drug or IV fluid may be infused.
C. Some manufacturers recommend the use of lidocaine for the treatment of pain associated with fluid administration. Check with your manufacturer and Medical Director for further guidance

0230 PROCEDURE PROTOCOL: EPISTAXIS MANAGEMENT



EMT	AEMT
EMT-I	Paramedic

General Guidelines:

- Most nosebleeding is from an anterior source and may be easily controlled
- Avoid phenylephrine in pts with known CAD
- Anticoagulantion with aspirin, clopidogrel (Plavix), warfarin (Coumadin) will make epistaxis much harder to control. Note if your patient is taking these or other anticoagulant medications
- Posterior epistaxis is a true emergency and may require advanced ED techniques such as balloon tamponade or interventional radiology. Do not delay transport. Be prepared for potential airway issues.
- Patients using nasal cannula oxygen may have cannula placed in mouth while nares are clamped or compressed for nosebleed

0240 PROCEDURE PROTOCOL: TASER PROBE REMOVAL

EMT	AEMT
EMT-I	Paramedic

Indications

- Patient with TASER probe(s) imbedded in skin.

Contraindications

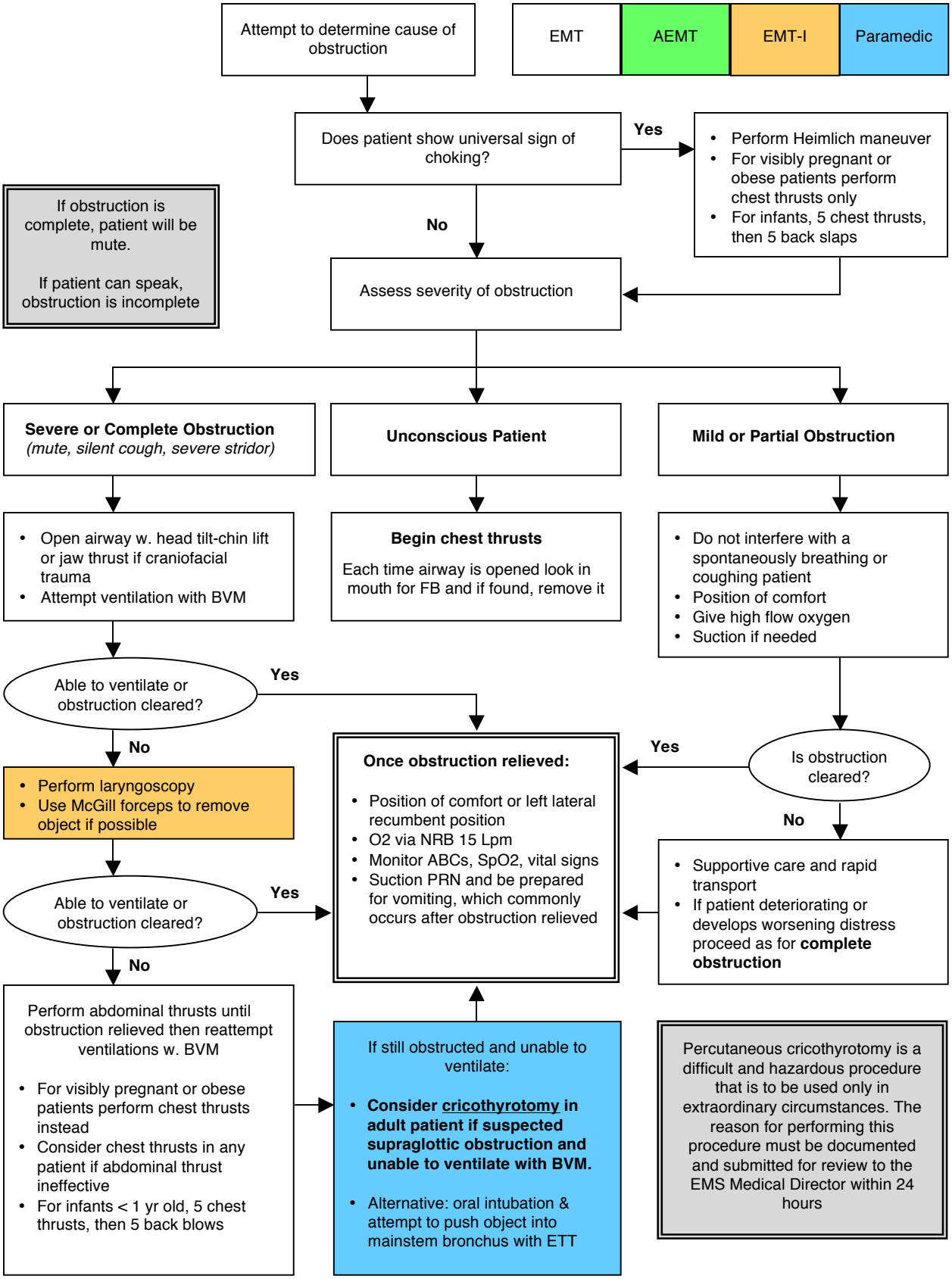
- TASER probe imbedded in the eye, face, or genitals. In such cases, transport patient to an emergency department for removal.

Technique

1. Confirm the TASER has been shut off and the barb cartridge has been disconnected. .
2. Using a pair of shears cut the TASER wires at the base of the probe.
3. Place one hand on the patient in area where the probe is imbedded and stabilize the skin surrounding the puncture site. Using the other hand (or use pliers) firmly grasp the probe.
4. In one uninterrupted motion, pull the probe out of the puncture site maintaining a 90° angle to the skin. Avoid twisting or bending the probe.
5. Repeat the process for any additional probes.
6. Once the probes are removed, inspect and assure they have been removed intact. In the event the probe is not removed intact or there is suspicion of a retained probe, the patient must be transported to the emergency department for evaluation.
7. Cleanse the probe site and surrounding skin with betadine and apply sterile dressing.
8. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever.

Additional Information

1010 OBSTRUCTED AIRWAY



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2000 ADULT (AGE ≥ 12 years) CARDIAC ARREST
GENERAL PRINCIPLES

Specific Information Needed For Patient Care Report

- Onset (witnessed or unwitnessed), preceding symptoms, bystander CPR, downtime before CPR and duration of CPR
- Past History: medications, medical history, suspicion of ingestion, trauma, environmental factors (hypothermia, inhalation, asphyxiation)

Document Specific Objective Findings

- Unconscious, unresponsive
- Agonal, or absent respirations
- Absent pulses
- Any signs of trauma, blood loss
- Skin temperature

General Guidelines: Chest Compressions

- 1 cycle of CPR = 30:2 chest compressions: breaths
- 5 cycles CPR = 2 minutes chest compressions
- Push hard and push fast (at least 100/minute)
- Ensure full chest recoil
- Rotate compressors every 2 minutes with rhythm checks
- During CPR, any interruption in chest compressions deprives heart and brain of necessary blood flow and lessens chance of successful defibrillation
    - Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks. Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check

General Guidelines: Defibrillation

- In unwitnessed cardiac arrest, give first 2 minutes of CPR without interruptions for ventilation. During this time period passive oxygenation is preferred with OPA and NRB facemask. If arrest is witnessed by EMS, immediate defibrillation is first priority
- All shocks should be given as single maximum energy shocks
    - Manual biphasic: follow device-specific recommendations for defibrillation. If uncertain, give maximum energy (e.g. 200J)
    - Manual monophasic: 360J
    - AED: device specific

General Guidelines: Ventilation during CPR

- If suspected cardiac etiology of arrest, during first approximately 5 minutes of VT/VF arrest, passive oxygenation with OPA and NRB facemask is preferred to positive pressure ventilation with BVM or advanced airway
- EMS personnel must use good judgment in assessing likely cause of pulseless arrest. In patients suspected of having a primary respiratory cause of cardiopulmonary arrest, (e.g.: COPD or status asthmaticus), adequate ventilation and oxygenation are a priority
- In general, patients with cardiac arrest initially have adequately oxygenated blood, but are in circulatory arrest. Therefore, chest compressions are initially more important than ventilation to provide perfusion to coronary arteries
- Do not interrupt chest compressions and do not hyperventilate. Hyperventilation decreases effectiveness of CPR and worsens outcome

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2000 ADULT (AGE ≥ 12 years) CARDIAC ARREST
GENERAL PRINCIPLES

General Guidelines: Timing Of Placement Of Advanced Airway

- Advanced airway (e.g. King, LMA, ETT) may be placed at any time after initial 2 rounds of chest compressions and rhythm analysis, provided placement does not interrupt chest compressions
- Once an advanced airway is in place, compressions are given continuously and breaths given asynchronously at 8-10 per minute
- Always confirm advanced airway placement with $ETCO_2$
    - Use continuous waveform capnography if available. In low flow states such as cardiac arrest, colorimetric CO_2 detector may be inaccurate and not sense very low CO_2 level

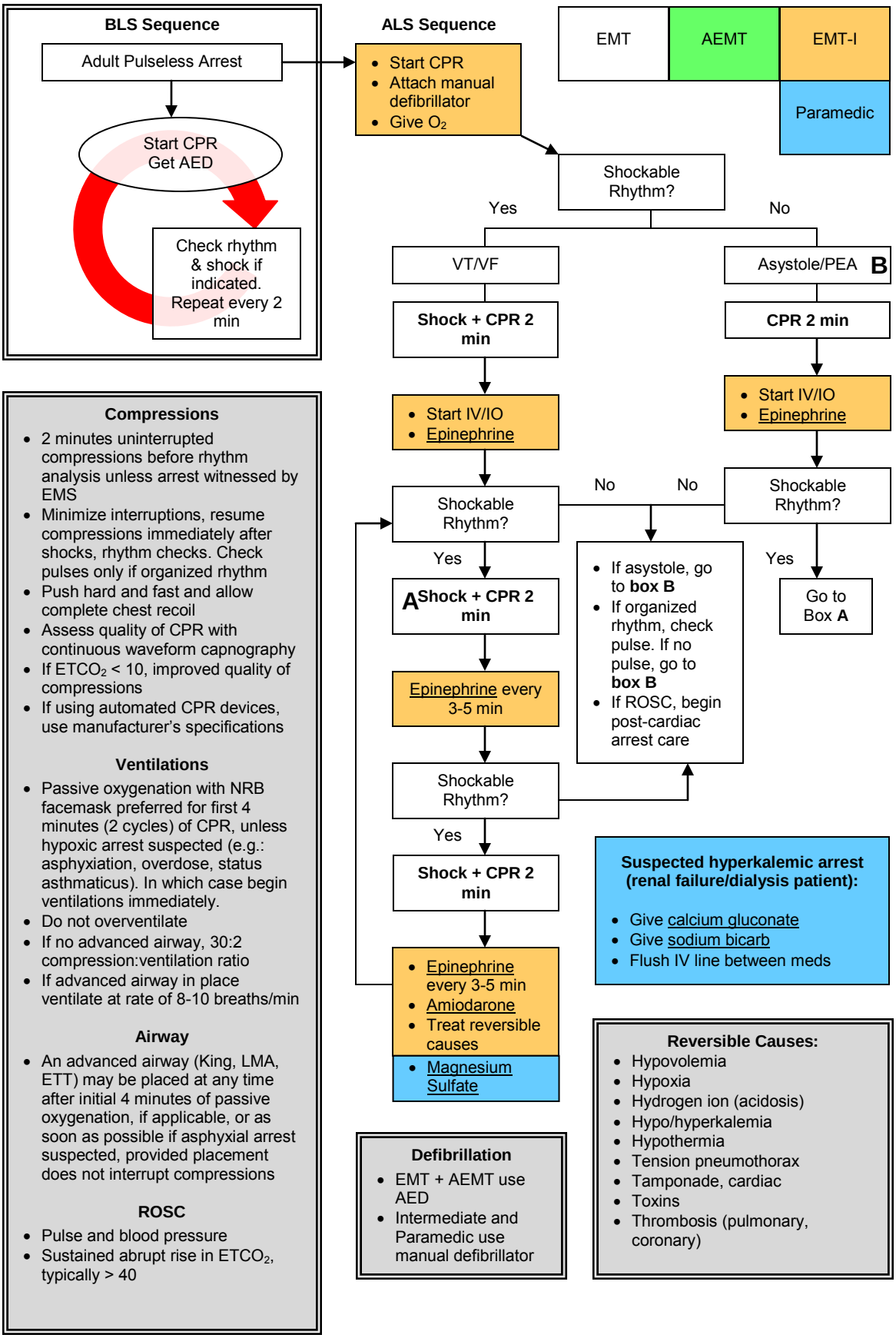
General Guidelines: Pacing

- Pacing is not indicated for asystole and PEA. Instead start chest compressions according to Universal Pulseless Arrest Algorithm.
- Pacing should **not** be undertaken if it follows unsuccessful defibrillation of VT/VF as it will only interfere with CPR and is not effective

General Guidelines: ICD/Pacemaker patients

- If cardiac arrest patient has an implantable cardioverter defibrillator (ICD) or pacemaker: place pacer/defib pads at least 1 inch from device. Biaxillary or anterior posterior pad placement may be used

2020 ADULT (AGE ≥ 12 YEARS) UNIVERSAL PULSELESS ARREST ALGORITHM



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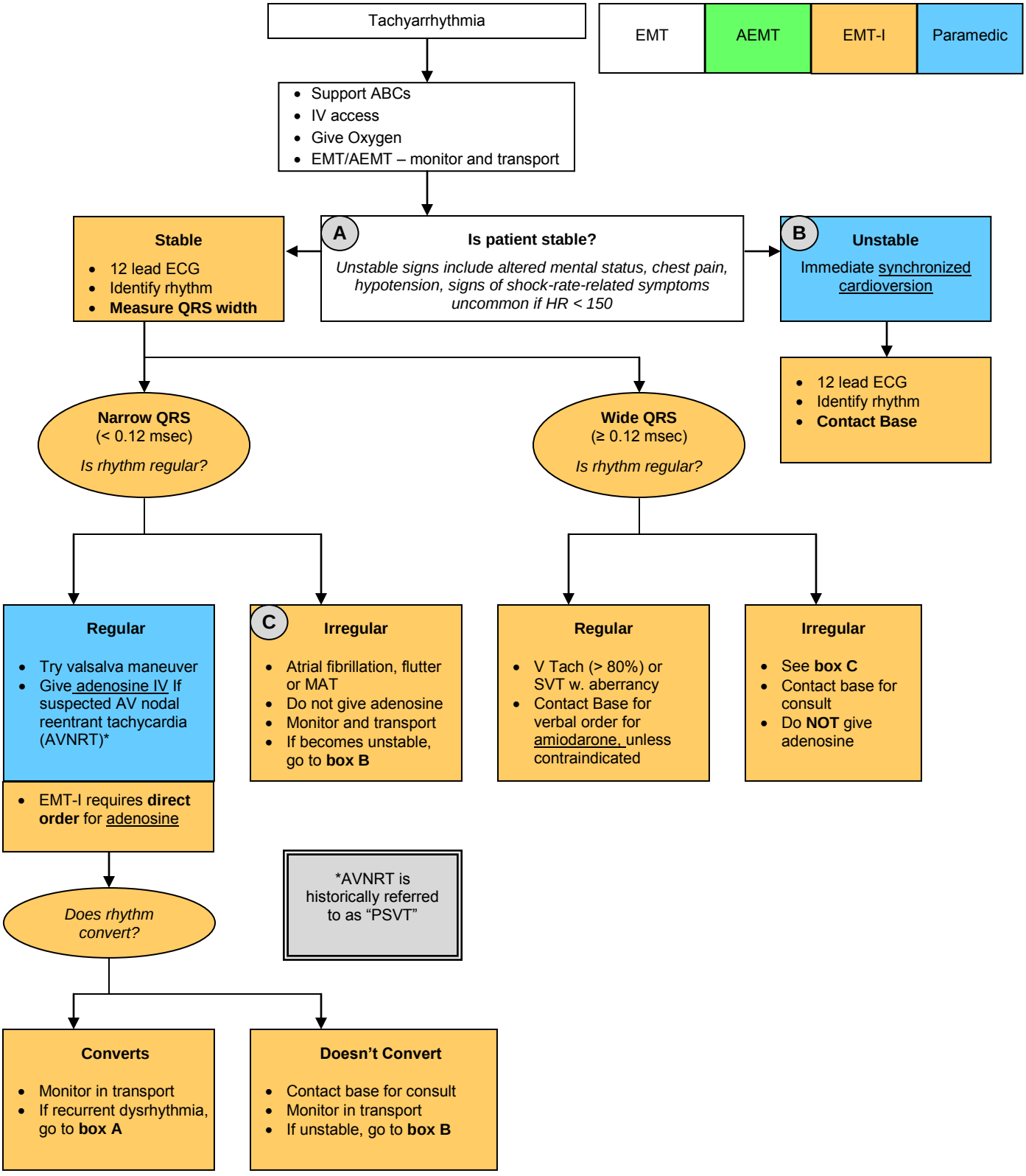
2030 ADULT (≥ 12 YEARS) TACHYARRHYTHMIA



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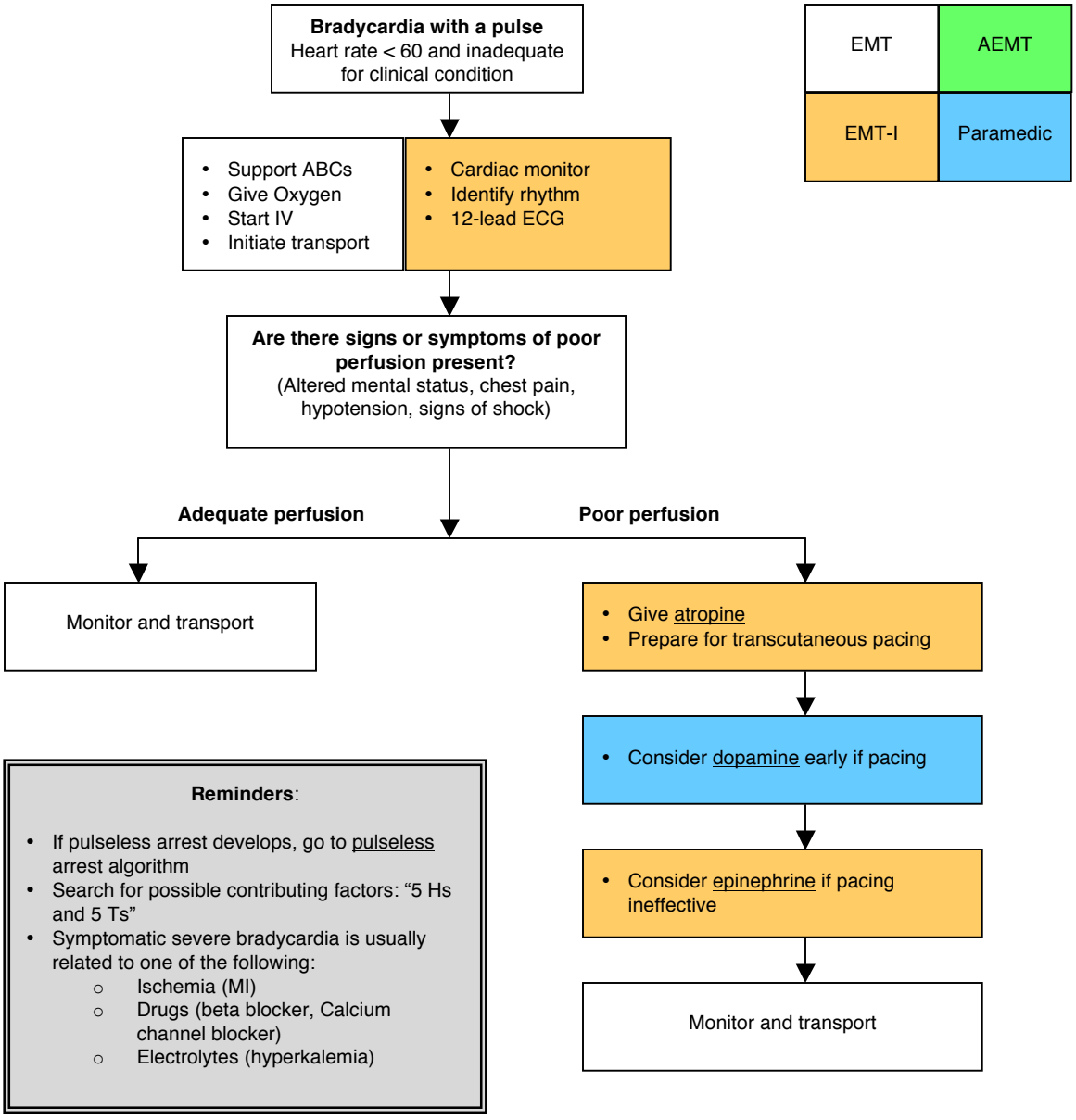
2040 ADULT (AGE ≥ 12 YEARS) BRADYARRHYTHMIA WITH POOR PERFUSION



2050 ADULT CHEST PAIN

EMT	AEMT	EMT-I	Paramedic

General:

A. Consider life-threatening causes of chest pain first in all patients:
    1. Acute coronary syndromes (ACS)
    2. Pulmonary embolism (PE)
    3. Thoracic aortic dissection (TAD)
    4. Tension pneumothorax (PTX)
B. Do not delay obtaining 12 lead ECG, if available, and notify receiving facility *immediately* if Cardiac Alert criteria met.

Document specific findings:

A. Complete set of vital signs
B. General appearance: skin color, diaphoresis
C. Cardiovascular exam: presence of irregular heart sounds, JVD, murmur, pulse asymmetry, dependent edema
D. Pulmonary exam: crackles/râles and/or wheezes/rhonchi
E. Chest wall and abdominal tenderness

Treatment:

A. ABCs
B. Reassure patient and place in position of comfort
C. Place patient on cardiac monitor
D. Administer oxygen
E. Start IV
F. EMT:
    1. If history suggests possible ACS:
        a. Administer 4 chewable 81mg aspirin
        b. In patients already taking nitroglycerin, contact base for verbal order for patient-assisted nitroglycerin up to 3 doses total, if not already taken.
G. AEMT:
    1. If history suggests possible ACS:
        a. Administer 4 chewable 81mg aspirin
        a. Administer nitroglycerine 0.4mg SL or spray if SBP > 100. Repeat dose every 5 minutes, up to a maximum of 3 doses, holding if SBP < 100
H. EMT-Intermediates and paramedics:
    2. Obtain 12-lead ECG.
        a. If patient has at least 1 mm ST segment elevation (STE) in at least 2 anatomically contiguous leads, notify receiving hospital and request CARDIAC ALERT (see Cardiac Alert Protocol).
    3. If history and physical exam suggest possible ACS:
        a. Administer 4 chewable 81mg aspirin
        b. Administer nitroglycerin 0.4mg SL or spray if SBP > 100. Repeat dose every 5 minutes, up to a maximum of 3 doses, holding if SBP < 100.
        c. Consider opioid IV for persistent pain, unless contraindicated. Opioid may be administered at any point if not responding adequately to SL nitroglycerin.
    4. Consider base station contact for additional medication orders if pain persists.

Precautions:

A. If inferior MI diagnosed (ST elevation in II, III, aVF), consider possibility of right ventricular infarct. Do not delay transport or receiving hospital contact, however, obtain right-sided ECG leads en route if time and conditions allow in order to identify right ventricular infarct.
B. If RV infarct pattern present (ST elevation in right-sided precordial leads, typically RV_4), give nitroglycerin with extreme caution as hypotension common.
C. If hypotension develops following nitroglycerine administration in any patient, treat with 250cc NS boluses.
D. Nitroglycerin is contraindicated in patients taking medication for erectile dysfunction (phosphodiesterase inhibitors, e.g.: Viagra, Cialis).

2051 CARDIAC ALERT

EMT-I	Paramedic

Goal:

- To identify patients with ST-segment elevation myocardial infarction (STEMI) in the prehospital setting and provide advanced receiving hospital notification in order to minimize door-to-balloon times for percutaneous coronary intervention (PCI)

Inclusion Criteria:

- Symptoms compatible with ACS (chest pain, diaphoresis, dyspnea, etc)
- 12-lead ECG showing ST-segment elevation (STE) at least 1 mm in two or more anatomically contiguous leads
- Age 35-85 years old (If STEMI patient outside age criteria, contact receiving hospital for consult)

Exclusion Criteria:

- Wide complex QRS (paced rhythm, BBB, other)
- Symptoms NOT suggestive of ACS (e.g.: asymptomatic patient)
- If unsure if patient is appropriate for Cardiac Alert, discuss with receiving hospital MD

Actions:

- Treat according to chest pain protocol en route (cardiac monitor, oxygen, aspirin, nitroglycerine and opioid)
- Notify receiving hospital ASAP with ETA and request CARDIAC ALERT. Do not delay hospital notification. If possible, notify ED before leaving scene
- Start 2 large bore peripheral IVs
- Rapid transport
- If patient does not meet inclusion criteria, or has exclusion criteria, yet clinical scenario and ECG suggests true STEMI, request medical consult with receiving hospital emergency physician

Additional Documentation Requirements:

- Time of first patient contact
- Time of first ECG

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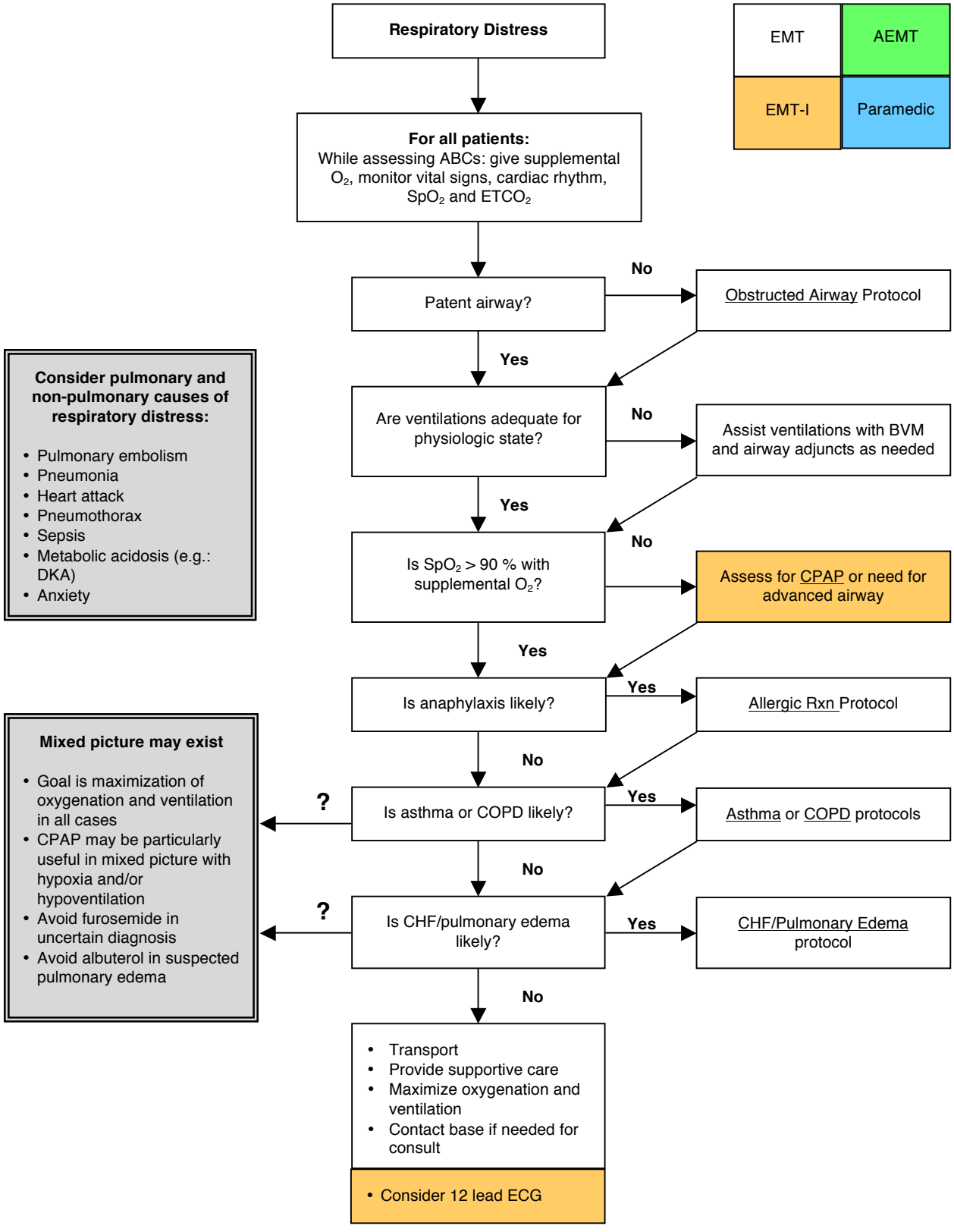
2100 HYPERTENSION

AEMT	EMT-I	Paramedic

Intent:

A. Even with extremes of blood pressure, treat the medical emergency **associated** with hypertension ("treat the patient, not the number")
    1. Treat chest pain, pulmonary edema, or stroke according to standard protocols (pain control will usually improve BP significantly)
B. Do not use medication to treat asymptomatic hypertension
C. Do not treat hypertension in acute stroke

3010 ADULT (AGE ≥ 12 YEARS) UNIVERSAL RESPIRATORY DISTRESS ALGORITHM



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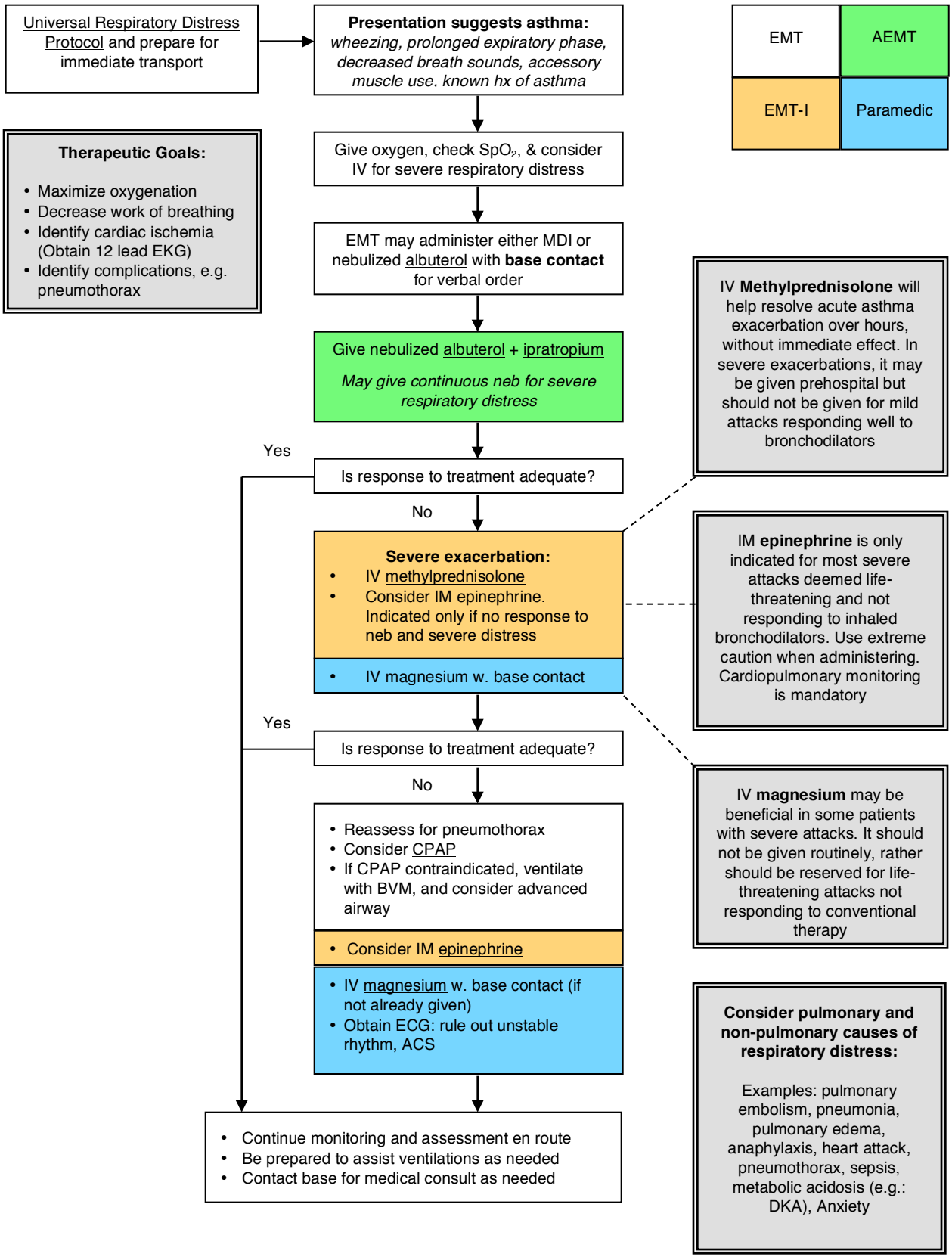
3020 ADULT (AGE ≥ 12 YEARS) ASTHMA



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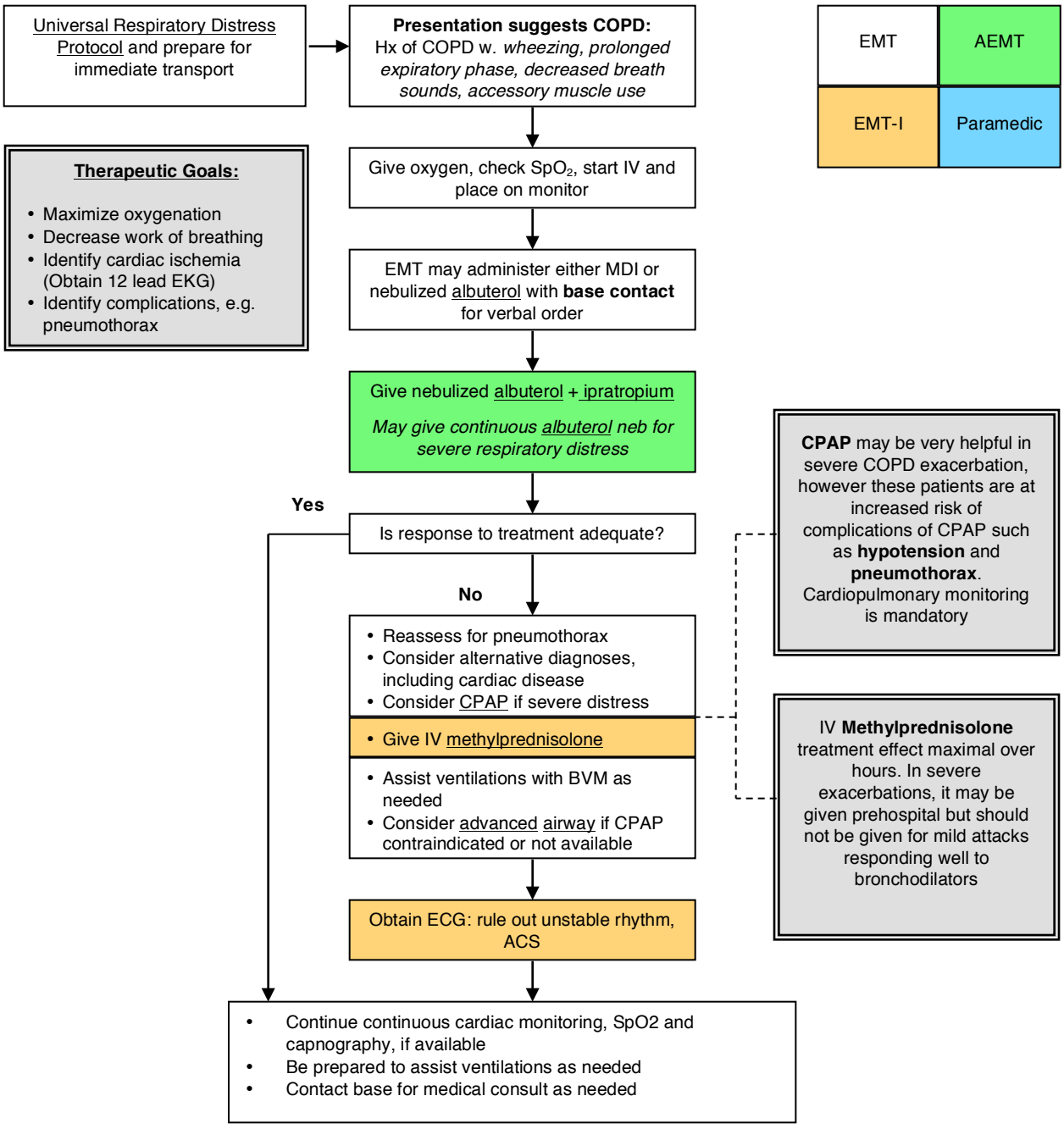
3030 COPD



Special Notes:

- **Correct hypoxia**: do not withhold maximum oxygen for fear of CO_2 retention
- **Consider pulmonary and non-pulmonary causes of respiratory distress:** Examples: pulmonary embolism, pneumonia, pulmonary edema, anaphylaxis, heart attack, pneumothorax, sepsis, metabolic acidosis (e.g.: DKA), Anxiety
- Patients with COPD are older and have comorbidities, including heart disease.
- Wheezing may be a presentation of pulmonary edema, “cardiac asthma”
- Common triggers for COPD exacerbations include: Infection, dysrhythmia (e.g.: atrial fibrillation), myocardial ischemia

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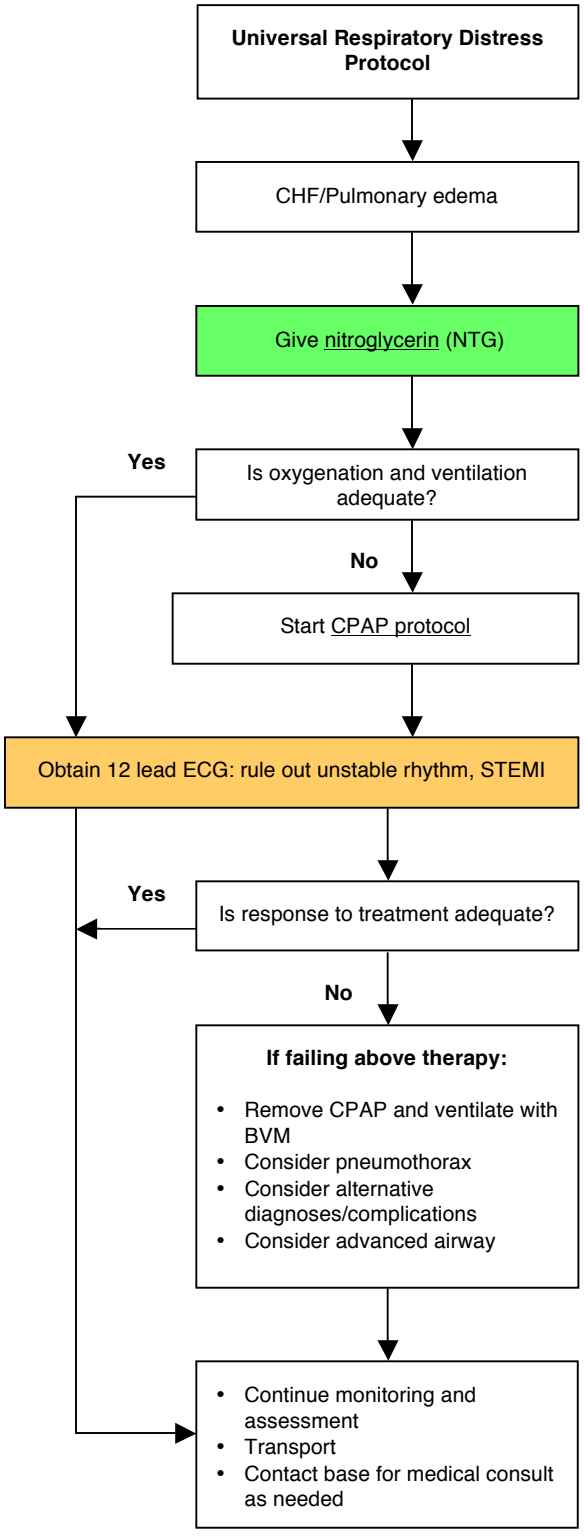
3050 CHF/PULMONARY EDEMA

EMT	AEMT
EMT-I	Paramedic



Therapeutic Goals:

- Maximize oxygenation
- Decrease work of breathing
- Identify cardiac ischemia (Obtain 12 lead ECG)

Special Notes:

- In general diuretics have little role in initial treatment of acute pulmonary edema and are no longer considered first line therapy.
- Morphine has been associated with worse outcomes in patients with CHF and is no longer preferred

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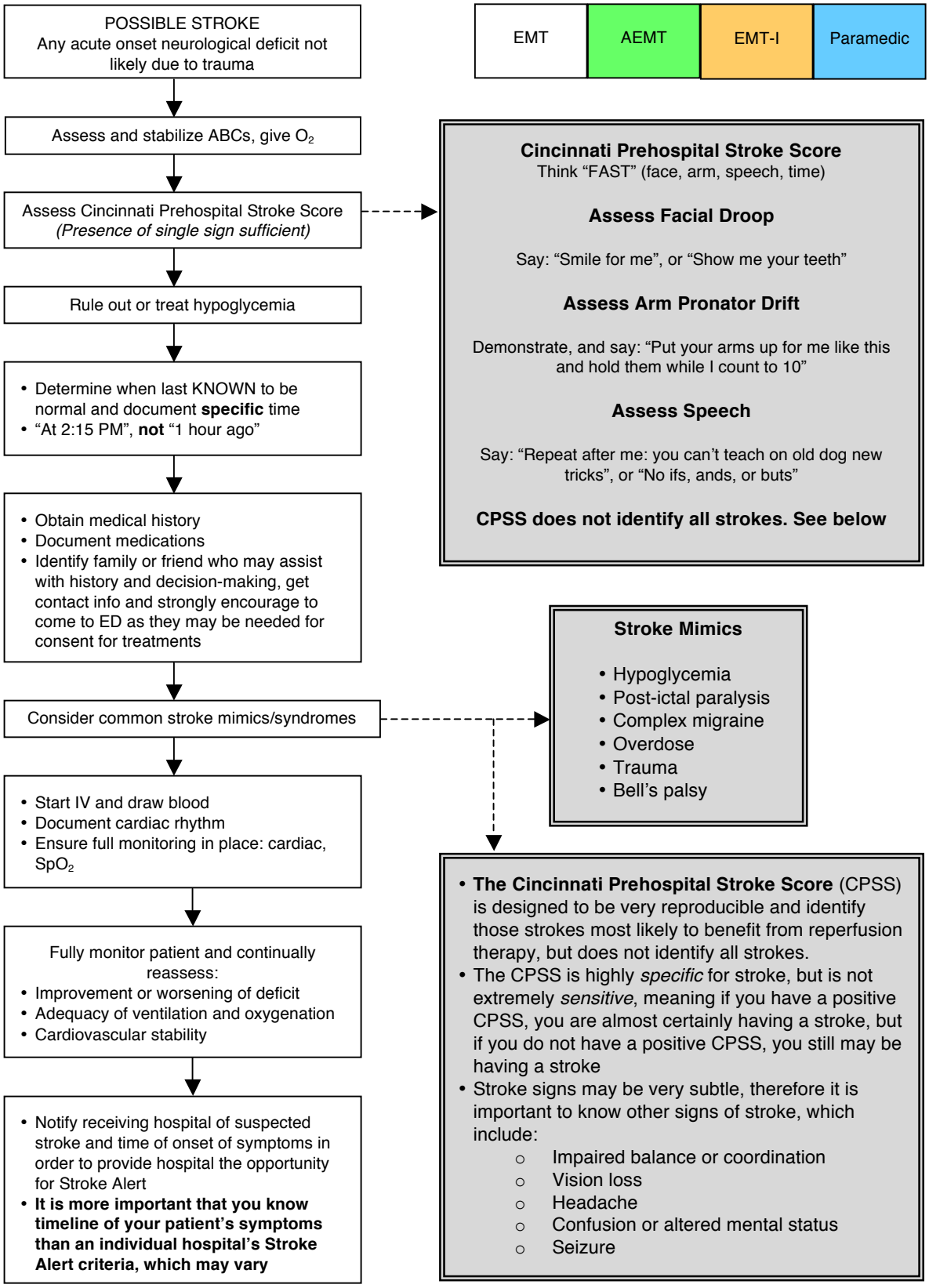
4011 STROKE



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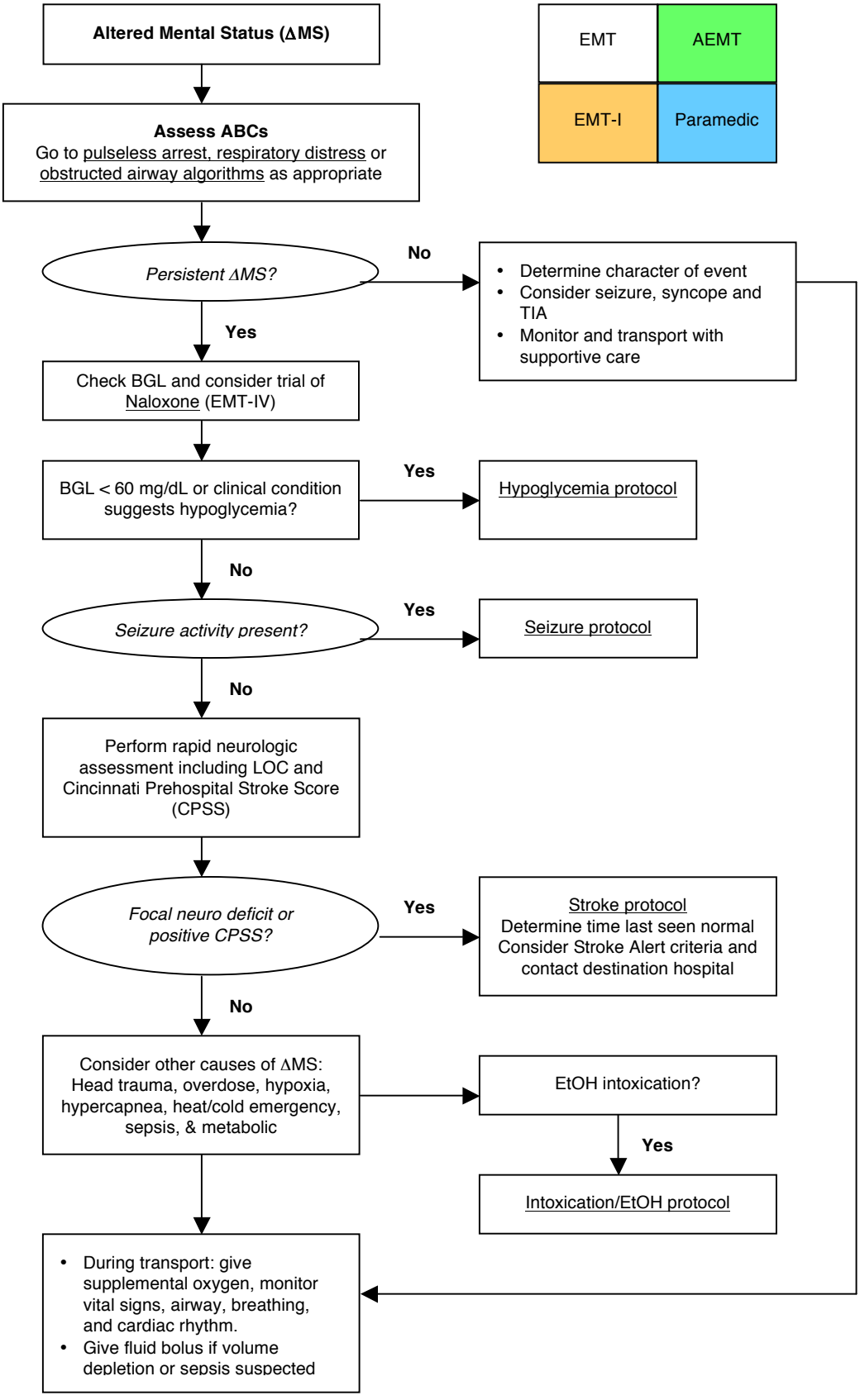
4012 UNIVERSAL ALTERED MENTAL STATUS



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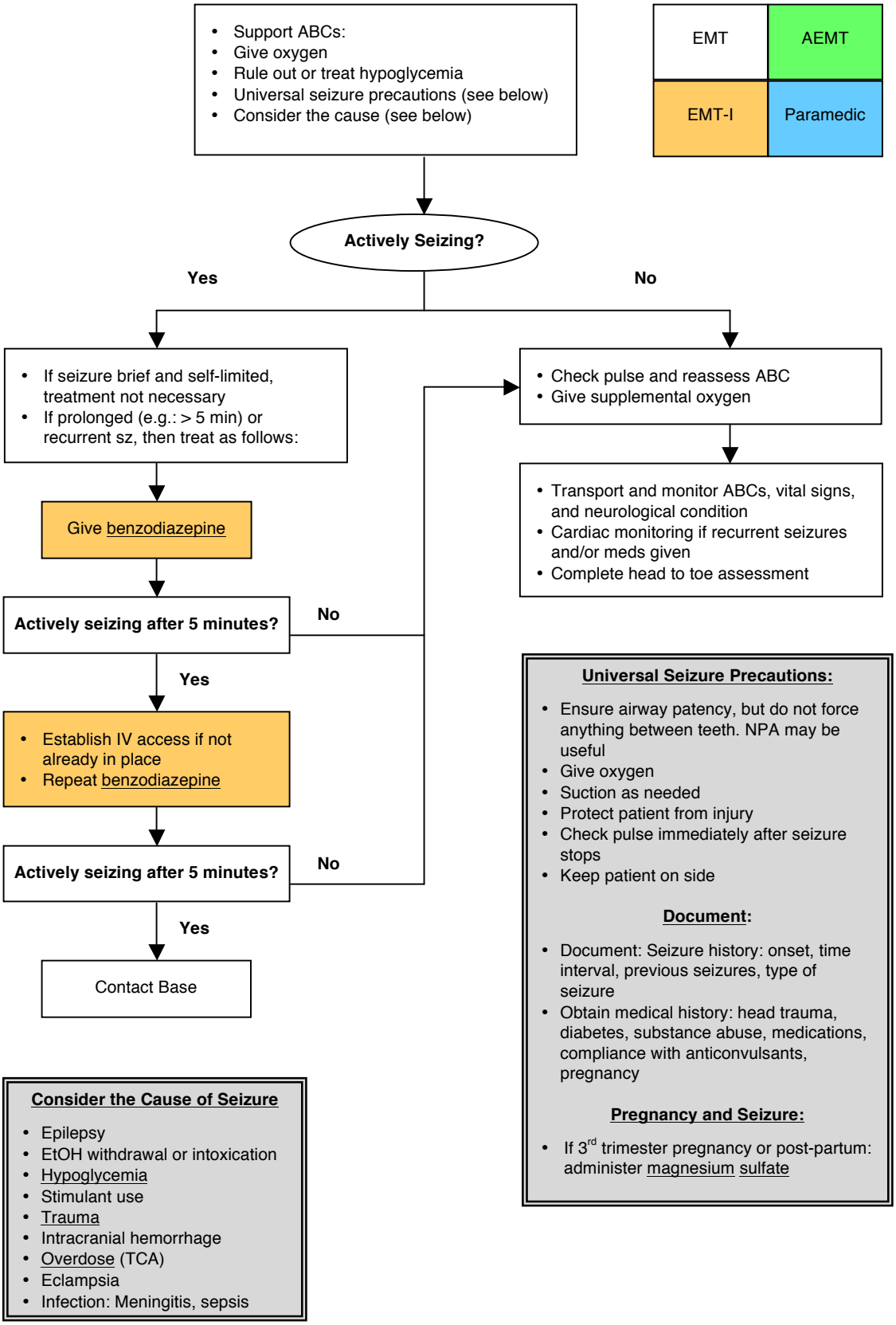
4013 ADULT (≥ 12 YEARS) SEIZURE



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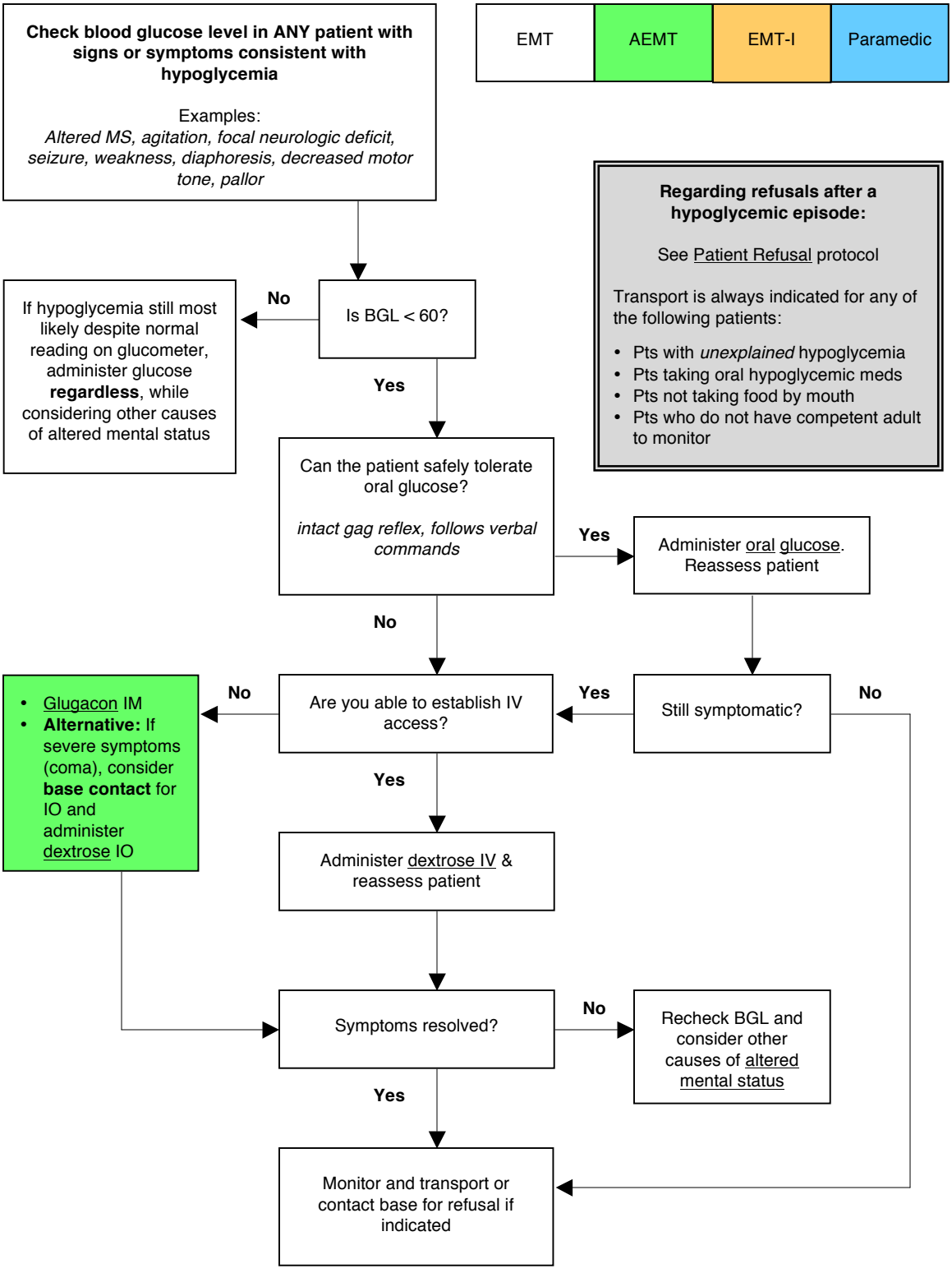
4014 HYPOGLYCEMIA



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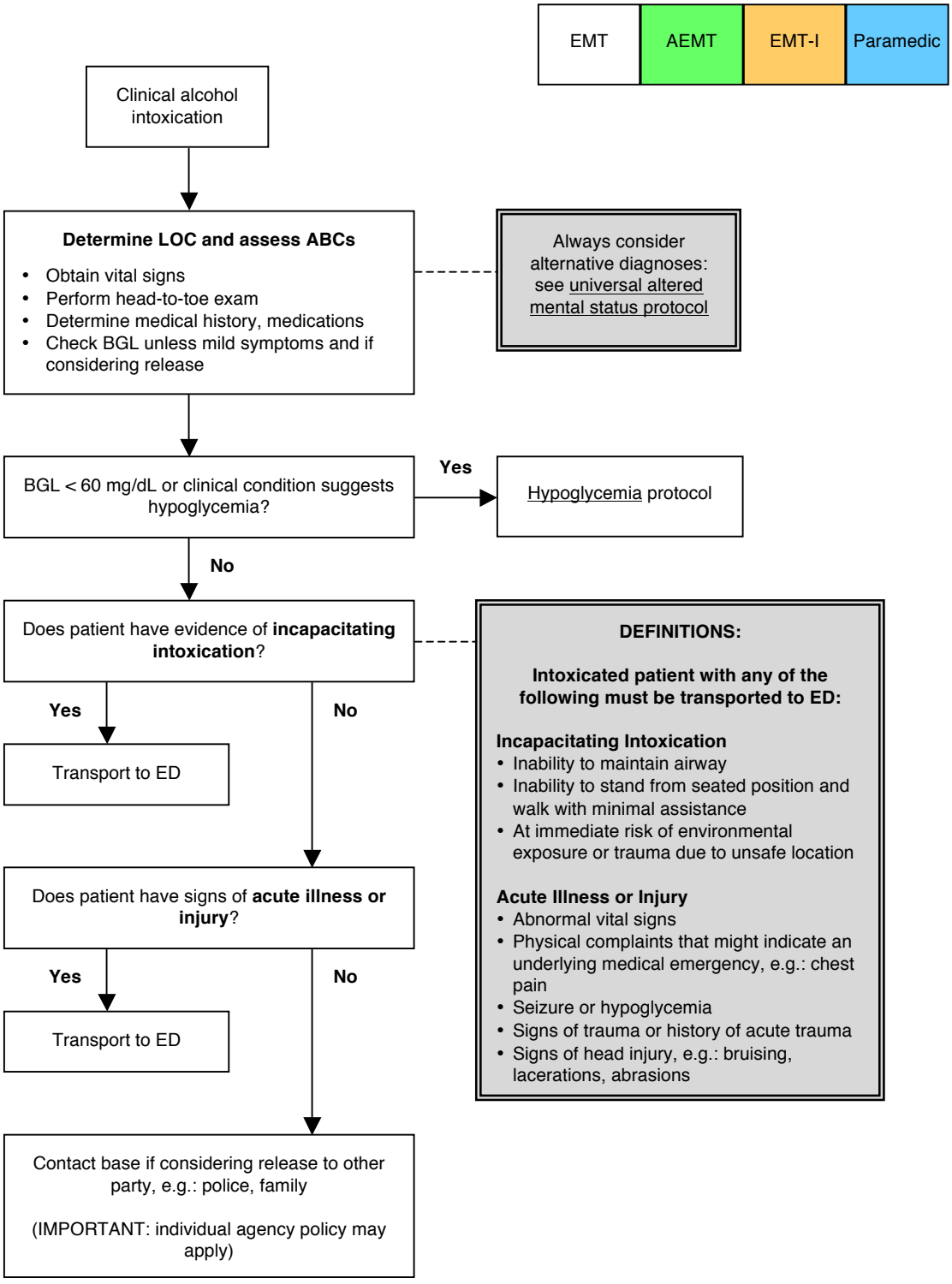
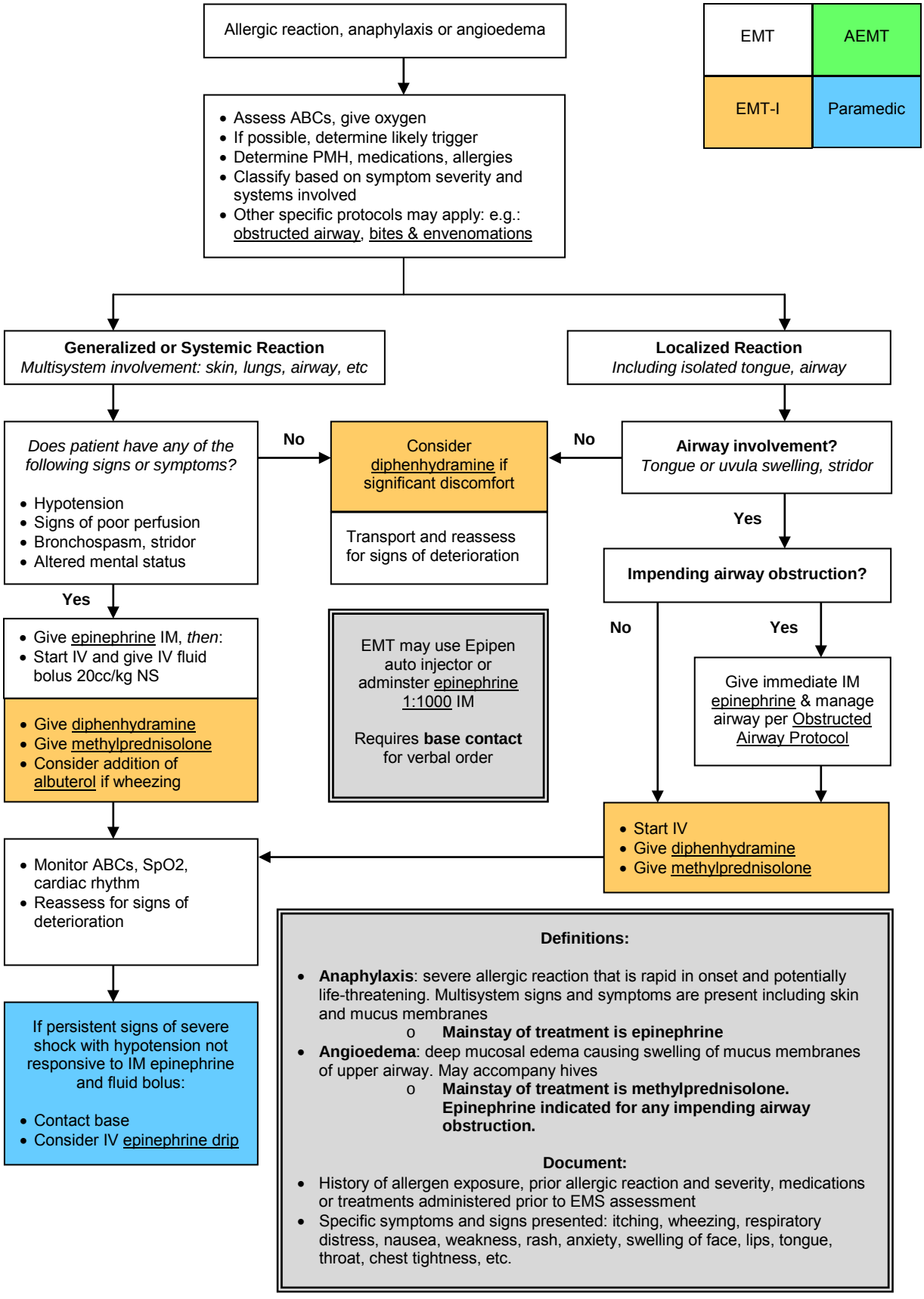
4015 ALCOHOL INTOXICATION



4020 ALLERGY AND ANAPHYLAXIS



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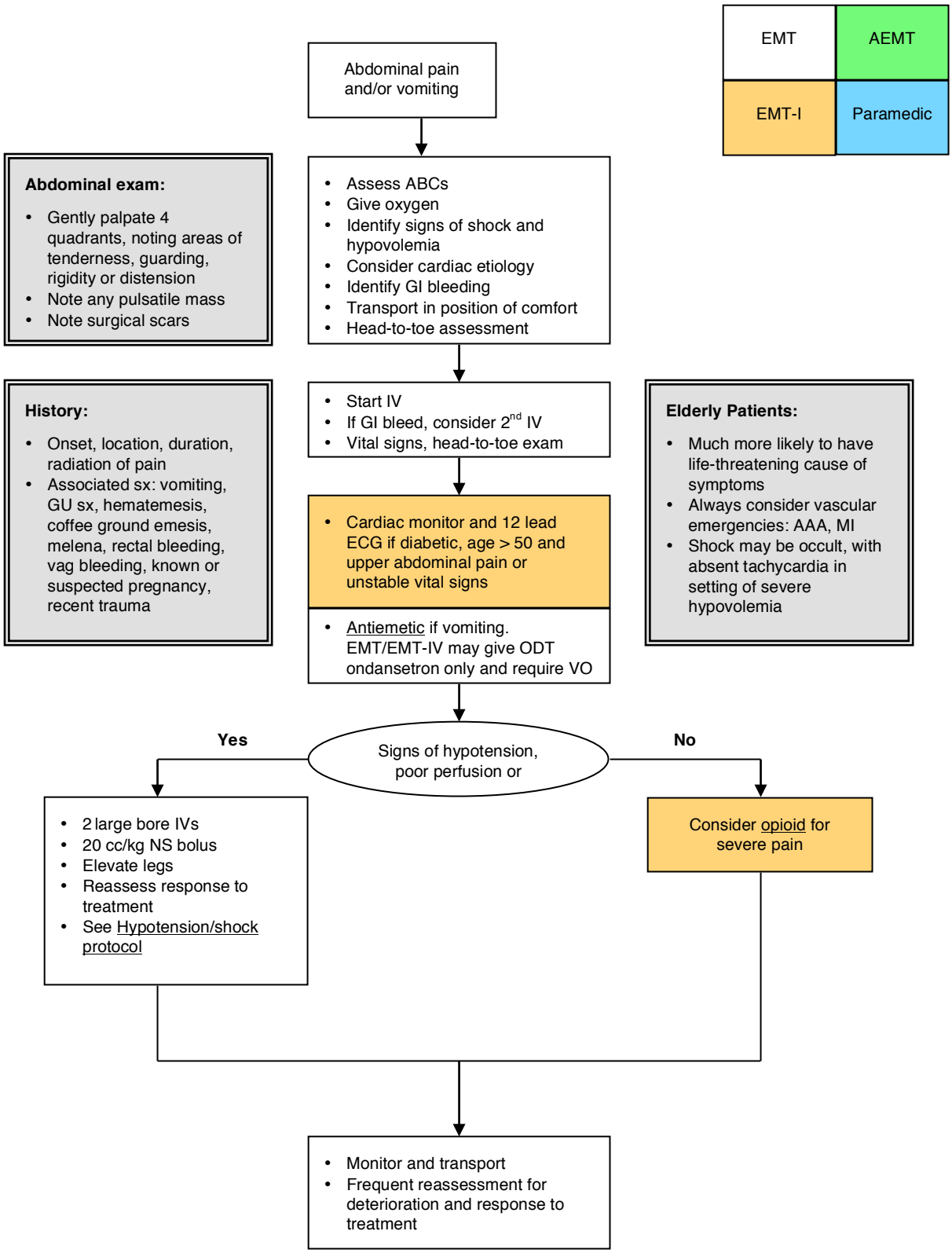
4030 ABDOMINAL PAIN/VOMITING



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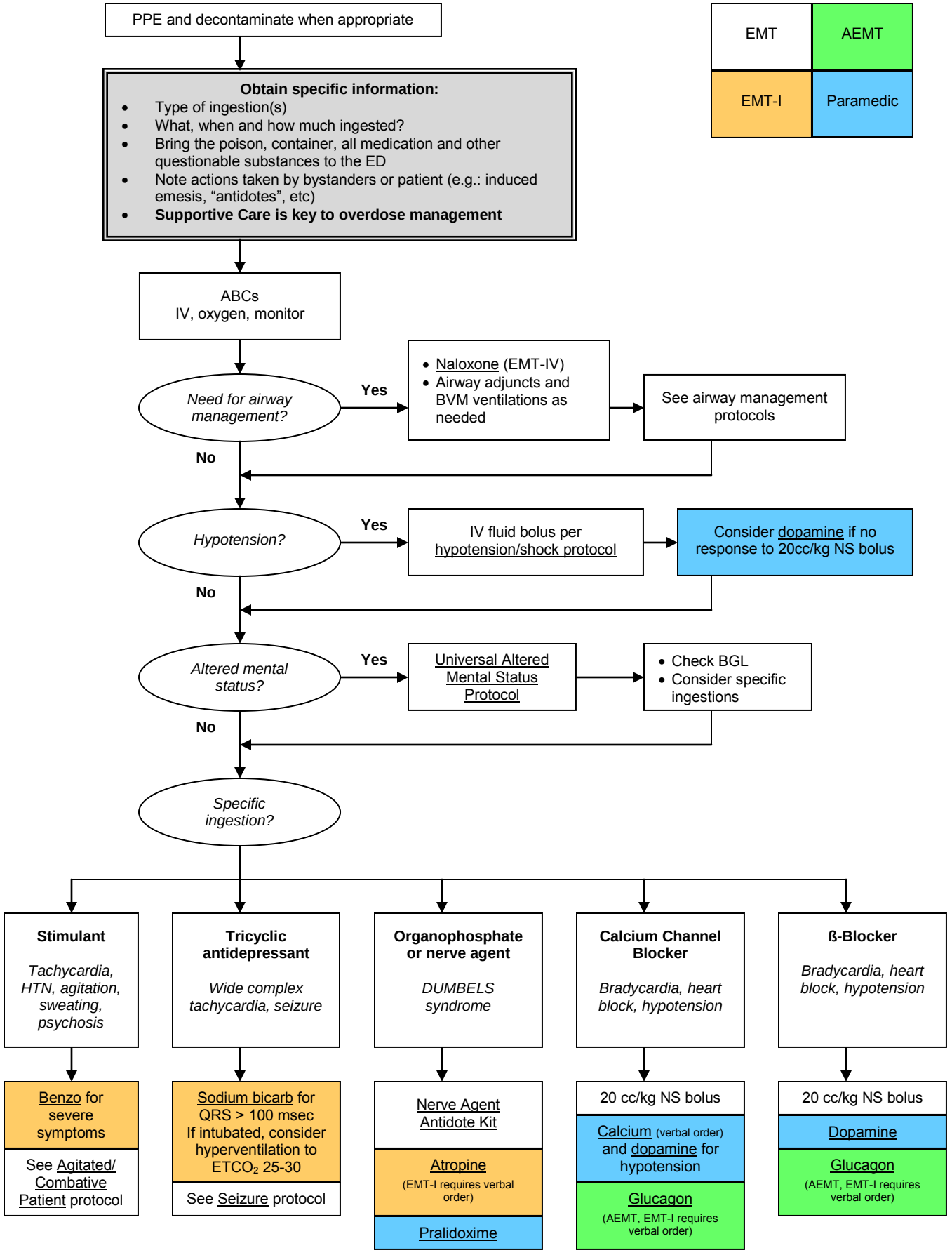
4040 OVERDOSE AND ACUTE POISONING



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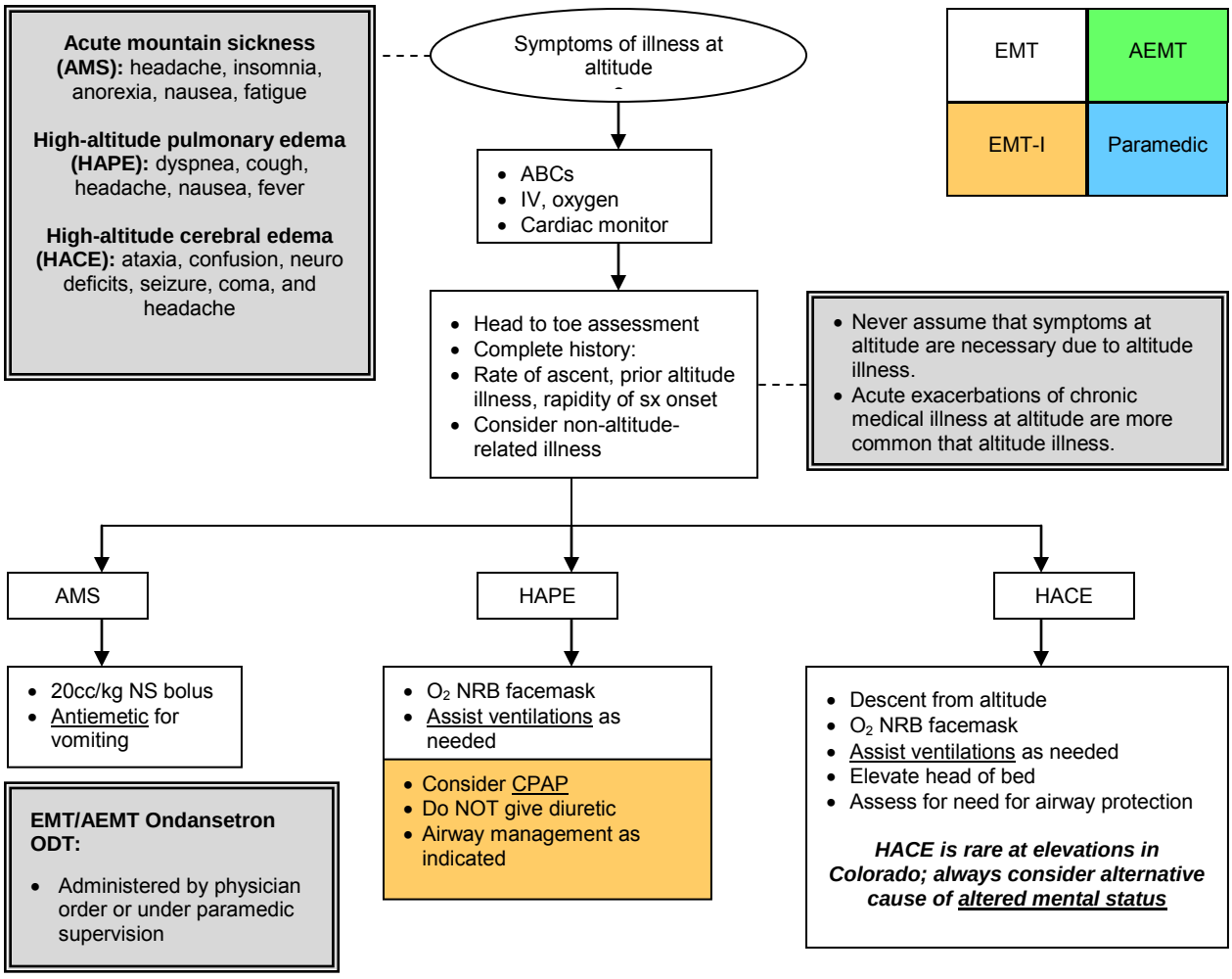
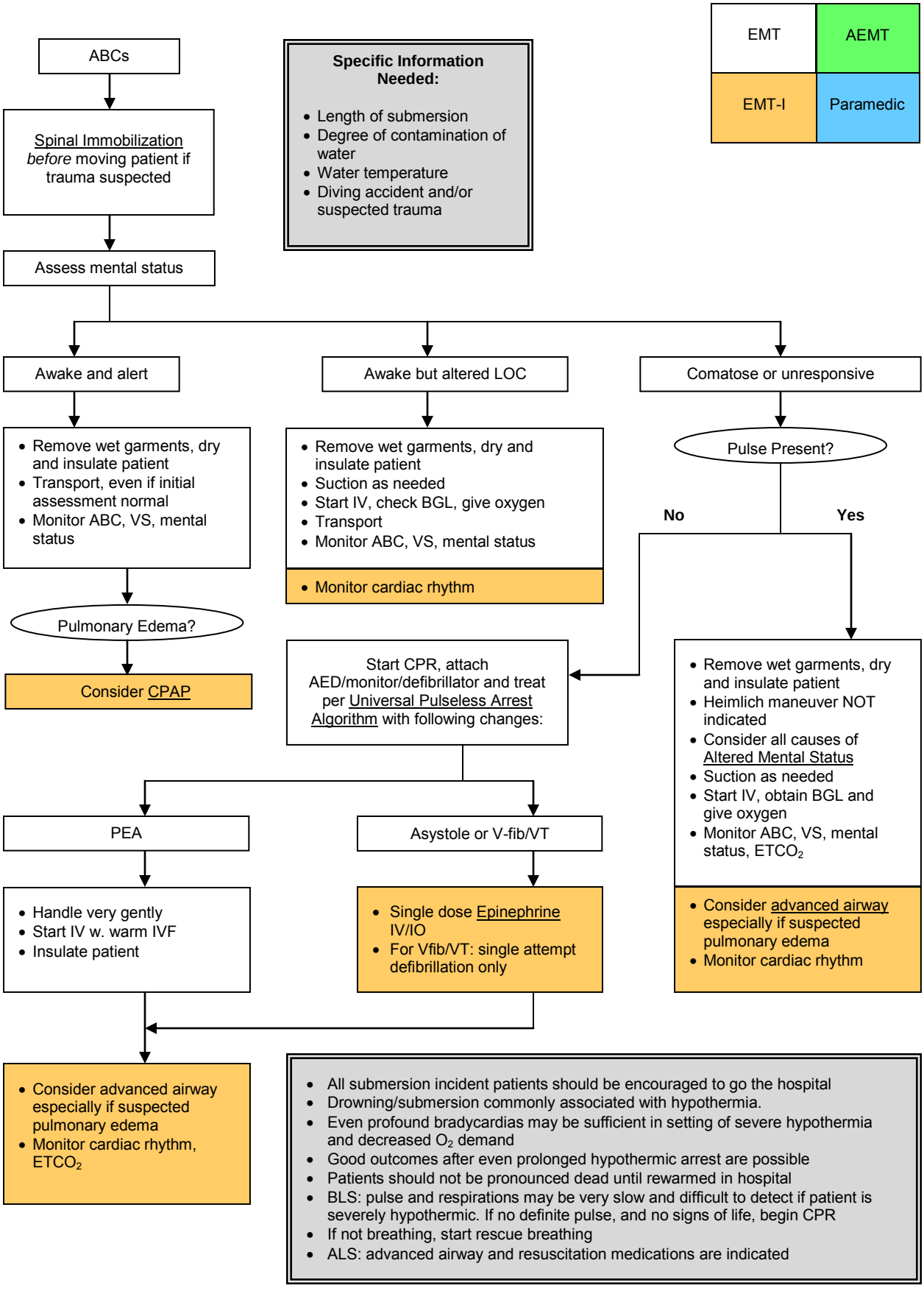
4051 HIGH ALTITUDE ILLNESS



Special Notes:

- There are no specific factors that accurately predict susceptibility to altitude sickness, but symptoms are worsened by exertion, dehydration, and alcohol ingestion.
- Acute Mountain Sickness (AMS) can begin to appear at around 6,500 ft above sea level, although most people will tolerate up to 8000 ft without difficulty. Altitude illness should not be suspected below 6,500 ft. AMS is the most frequent type of altitude sickness encountered. Symptoms often manifest themselves six to ten hours after ascent and generally subside in one to two days, but they occasionally develop into the more serious conditions.
- High altitude pulmonary edema (HAPE) and cerebral edema (HACE) are the most severe forms of high altitude illness. The rate of ascent, altitude attained, exertion, and individual susceptibility are contributing factors to the onset and severity of high-altitude illness
- Mild HAPE may be managed with high-flow oxygen and supportive care, and does not necessarily require descent from altitude.
- More severe forms of HAPE and all forms of HACE require descent

4052 DROWNING



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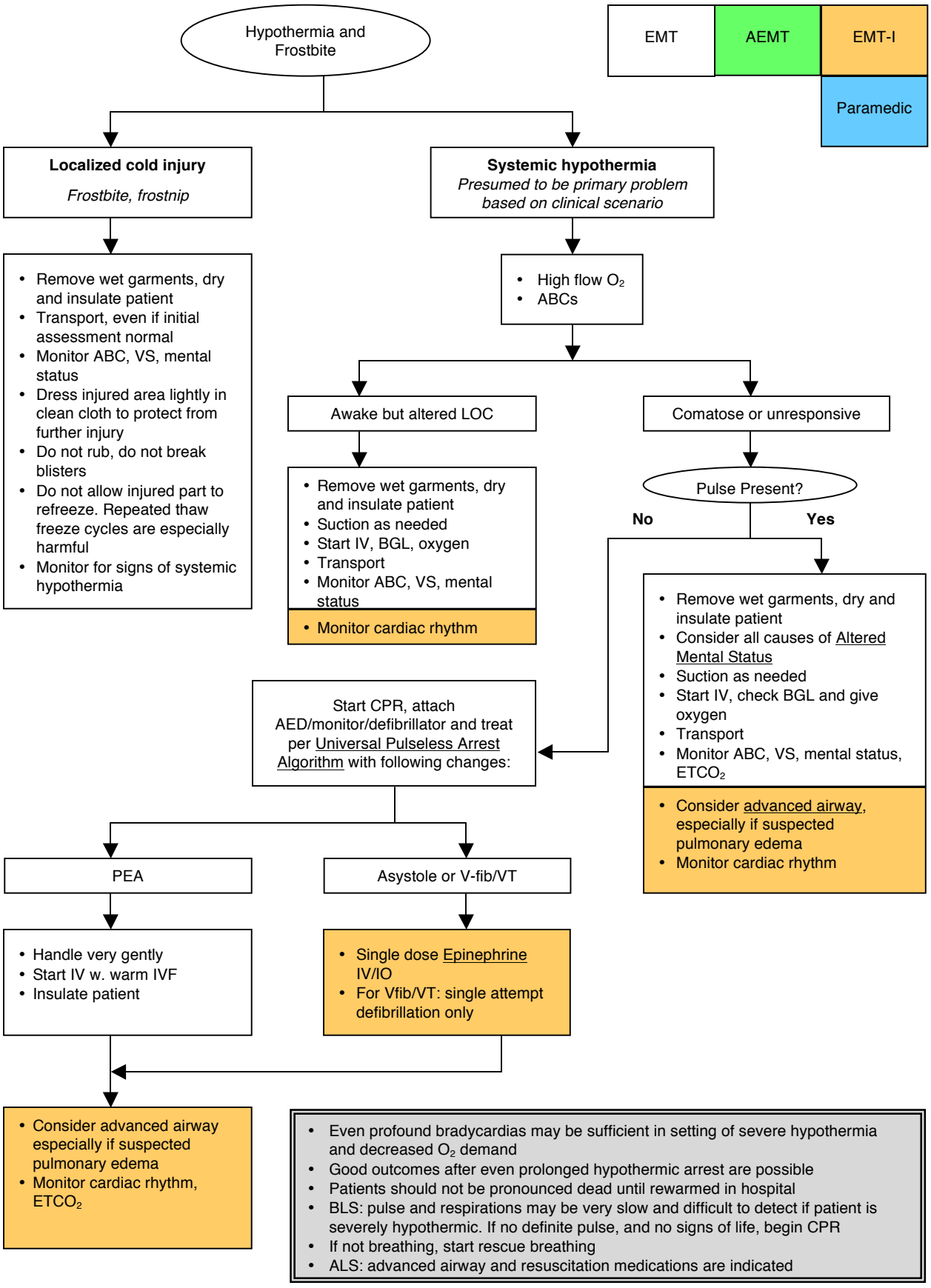
4053 HYPOTHERMIA



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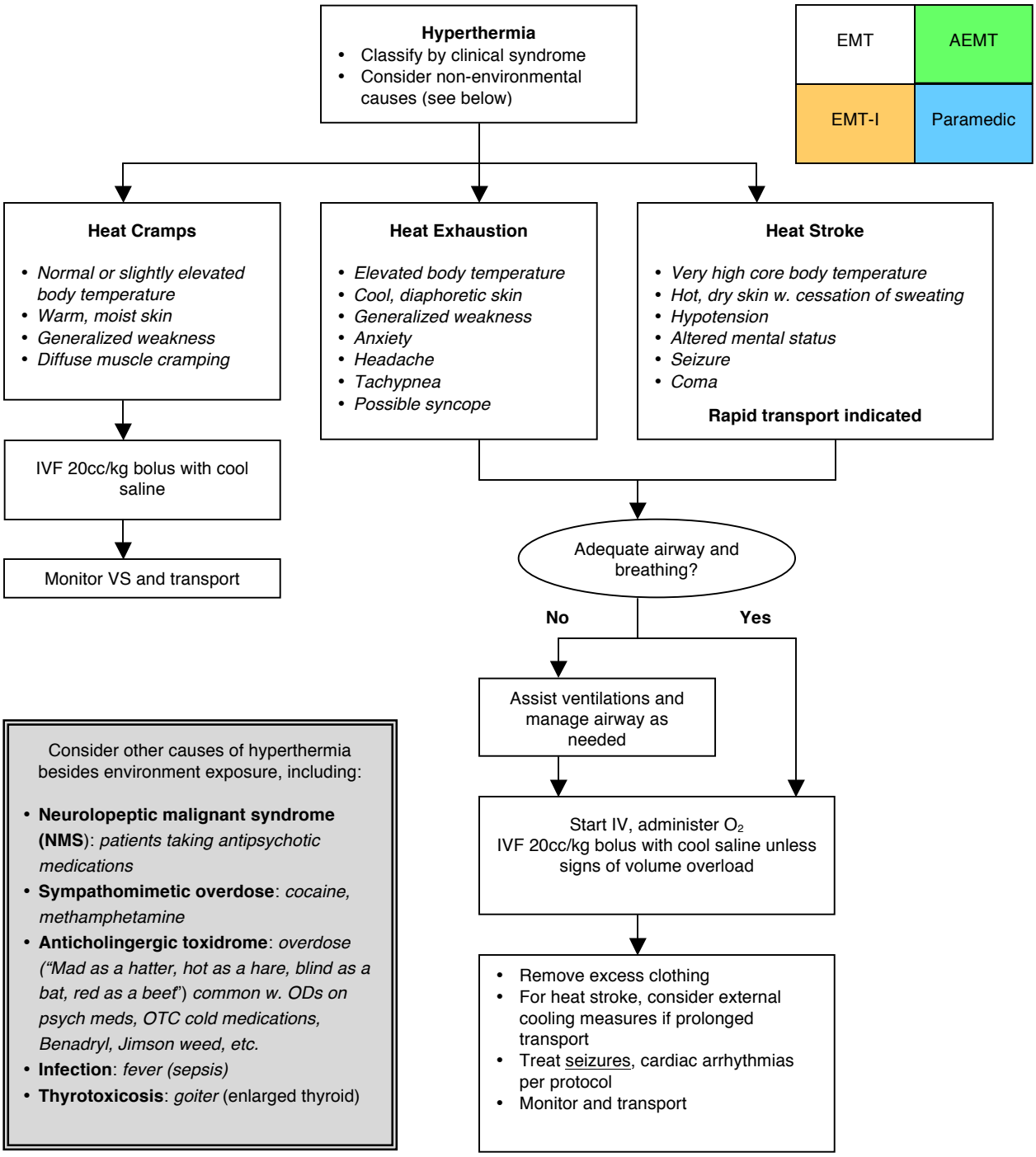
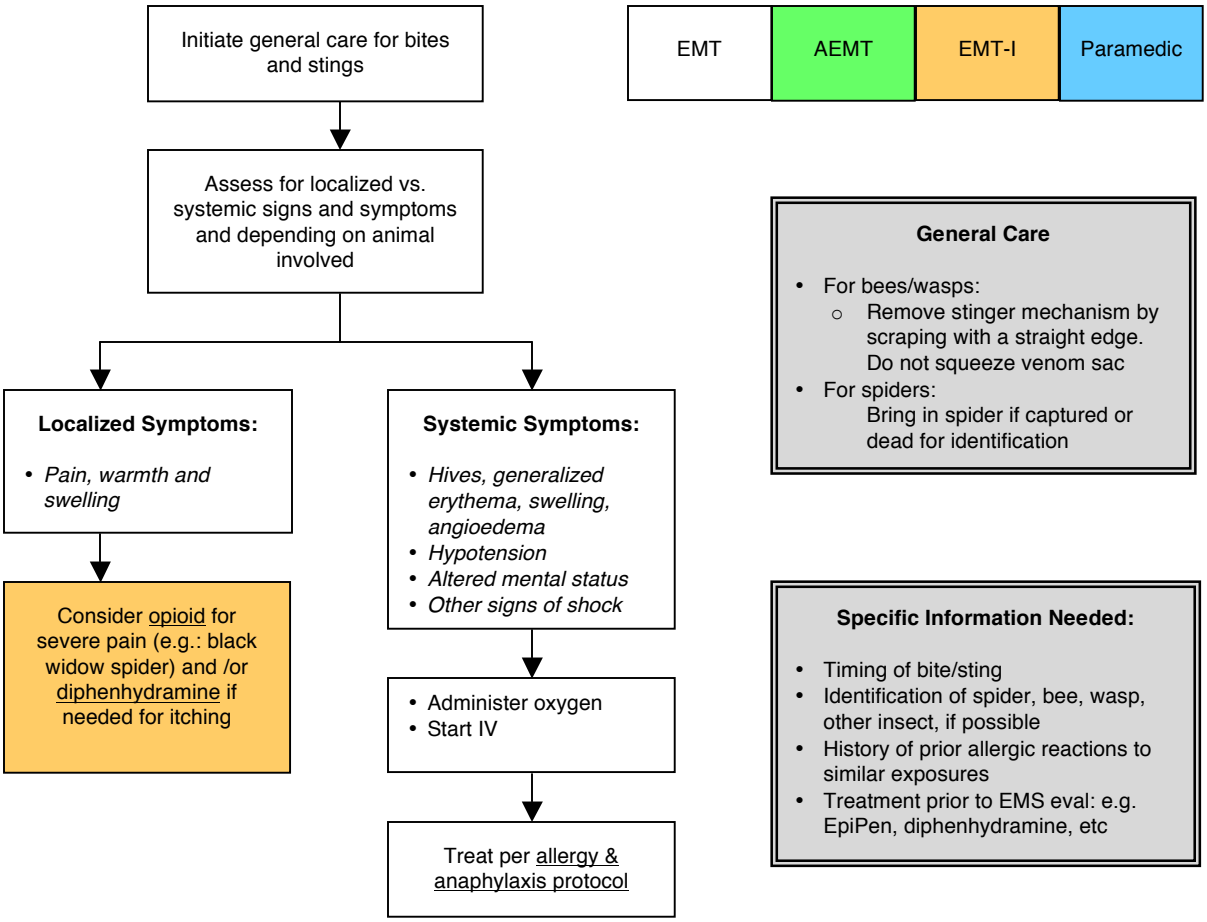
4054 ENVIRONMENTAL HYPERTHERMIA



4055 INSECT/ARACHNID STINGS AND BITES PROTOCOL



Specific Precautions:

- For all types of bites and stings, the goal of prehospital care is to prevent further envenomation and to treat allergic reactions
- BLS personnel may assist patient with administering own Epipen and oral antihistamine
- Anaphylactoid reactions may occur upon first exposure to allergen, and do not require prior sensitization
- Anaphylactic reactions typically occur abruptly, and rarely > 60 minutes after exposure

4056 SNAKE BITE PROTOCOL

EMT	AEMT	EMT-I	Paramedic

- Assess ABCs, mental status
- Administer oxygen
- Start IV
- Monitor VS

Initiate general care for snake bites

Assess for localized vs. systemic signs and symptoms

Localized Symptoms:

- *Pain and swelling*
- *Numbness, tingling to bitten part*
- *Bruising/eccymoses*

Opioid for severe pain

- Transport with bitten part immobilized
- Monitor ABCs and for development of systemic signs/sx
- Complete General Care en route

Systemic Symptoms:

- *Metallic or peculiar taste in mouth*
- *Hypotension*
- *Altered mental status*
- *Widespread bleeding*
- *Other signs of shock*

Be prepared to manage airway if signs of airway obstruction develop

Opioid for severe pain and if not contraindicated by hypotension

Treat hypotension w. 20cc/kg IV NS bolus
See hypotension/shock protocol

General Care:

- Remove patient from proximity to snake
- Remove all constricting items from bitten limb (e.g.: rings, jewelry, watch, etc.)
- Immobilize bitten part
- Initiate prompt transport
- Do NOT use ice, refrigerants, tourniquets, scalpels or suction devices
- Mark margins of erythema and/or edema with pen or marker and include time measured

Obtain specific information:

- Appearance of snake (rattle, color, thermal pit, elliptical pupils)
- Appearance of wound: location, # of fangs vs. entire jaw imprint
- Timing of bite
- Prior 1st aid
- To help with identification of snake, photograph snake, if possible. Include image of head, tail, and any distinctive markings.
- Do not bring snake to ED

Specific Precautions:

- The prairie rattlesnake is native to Denver Metro region and is most common venomous snake bite in region
- Exotic venomous snakes, such as pets or zoo animals, may have different signs and symptoms than those of pit vipers. In case of exotic snake bite, contact base and consult zoo staff or poison center for direction.
- If adequate photo can be taken, it is not necessary to bring snake to ED.
- Never pick up a presumed-to-be-dead snake by hand. Rather, use a shovel or stick. A dead snake may reflexively bite and envenomate.
- > 25% of snake bites are “dry bites”, without envenomations.
- Conversely, initial appearance of bite may be deceiving as to severity of envenomation.
- Fang marks are characteristic of pit viper bites (e.g. rattlesnakes).
- Jaw prints, without fang marks, are more characteristic of non-venomous species.

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4060 MEDICAL HYPOTENSION/SHOCK PROTOCOL

Shock is a state of decreased tissue oxygenation. Significant vital organ hypoperfusion may be present without hypotension. Home medications and/or comorbidities may also limit development of tachycardia

**

Goal is to maximize **oxygen delivery** with supplemental oxygen and assisted ventilations (if needed), and to maximize **perfusion** with IV fluids

Adult with SBP < 90 mmHg AND/OR signs of poor perfusion

EMT	AEMT
EMT-I	Paramedic

- ABCs
- Complete set of vital signs
- Full monitoring
- O_2 via NRB facemask @ 15L/min
- IV access
- ALS transport

Signs of poor perfusion?

Altered mental status
Tachycardia
Cool, clammy skin
Venous lactate > 4 (see below)

No → Recheck and monitor
If patient remains asymptomatic and clinically stable, treatment may not be necessary

Yes

Life-threatening brady or tachydysrrhythmia?

Yes → Treat according to appropriate protocol

No

- Consider etiology of shock state
- Give 500cc NS bolus IV/IO and reassess

Consider the etiology of your patient's shock state, which may have specific treatments, e.g.:

- Sepsis
- Hemorrhage
- Anaphylaxis
- Overdose
- Cyanide or carbon monoxide poisoning
- Other: PE, MI, tension pneumothorax

Repeat 500cc boluses, reassessing for pulmonary edema, up to 2 liters total or until goal of SBP > 90 mmHg and signs adequate perfusion

For ongoing hypotension, poor perfusion or pulmonary edema, contact base for dopamine drip

If patient at risk for adrenal insufficiency, see Adrenal Insufficiency protocol

Septic Shock
Defined by:

1. Presence of Systemic Inflammatory Response Syndrome (SIRS)

AND

2. Suspected infection

AND

3. Signs of hypoperfusion (hypotension or elevated venous lactate)

SIRS criteria:

- HR > 110
- RR > 24
- Temp > 100.4° or < 96.8° F

The initial treatment of septic shock involves maximizing perfusion with IVF boluses, not vasopressors

Adrenal Insufficiency
Patients at risk include:

- Chronic steroid use
- Addison's disease
- Congenital adrenal hyperplasia
- Other patients identified as such by family, medical record, or physician note

Lactate Measurement

At this time there is insufficient evidence to recommend for or against routine point of care measurement of lactate by EMS. Although it shows promise for improved detection of hypoperfusion, lactate measurement is not considered mandatory or standard of care by the Denver Metro EMS Medical Directors. Its use will be governed by individual agency Medical Director policy

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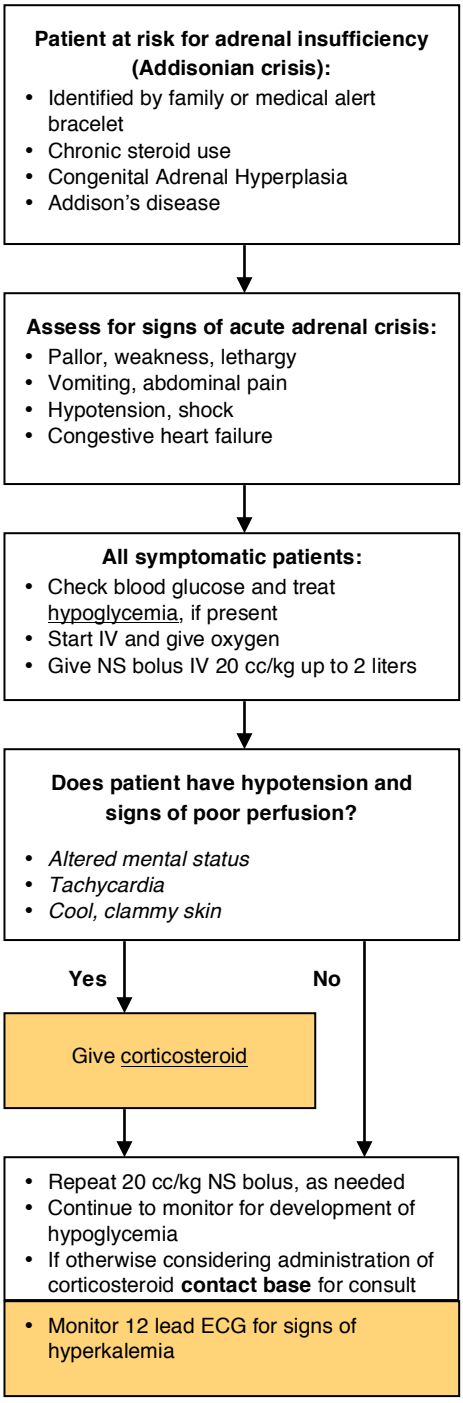
4061 ADRENAL INSUFFICIENCY PROTOCOL



EMT	AEMT
EMT-I	Paramedic

Corticosteroid Administration

- **Adult** (Age 12 years or older):
  - Methylprednisolone 125 mg IV/IM x 1
- **Pediatric** (age < 12 years):
  - Methylprednisolone 2 mg/kg IV/IM up to a maximum dose of 125 mg x 1

- If the patient is confirmed to have a disease (such as congenital adrenal hyperplasia or chronic use of systemic steroids) that could lead to acute adrenal insufficiency or Addisonian crisis, then the administration of steroids may be life-saving and necessary for reversing shock or preventing cardiovascular collapse
- Patients at risk for adrenal insufficiency may develop Addisonian crisis when under physiologic stress which would not lead to cardiovascular collapse in normal patients. Such triggers may include trauma, dehydration, infection, myocardial ischemia, etc.
- If no corticosteroid is available during transport, notify receiving hospital of need for immediate corticosteroid upon arrival
- Under Chapter 2 Rule: specialized prescription medications to address an acute crisis may be given by all levels with a direct VO, given the route of administration is within the scope of the provider. This applies to giving hydrocortisone for adrenal crisis, for instance if a patient or family member has this medication available on scene. Contact base for direct verbal order

4070 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

EMT	AEMT
EMT-I	Paramedic

Scene Safety

A. Scene safety and provider safety are a priority. Consider police contact if scene safety is a concern.
B. Refer to restraint protocol as needed, especially as it relates to A.

Specific Information Needed

A. Obtain history of current event; inquire about recent crisis, toxic exposure, drugs, alcohol, emotional trauma, and suicidal or homicidal ideation.
B. Obtain past history; inquire about previous psychiatric and medical problems, medications.

Specific Objective Findings

A. Evaluate general appearance
    1. E.g.: Well groomed, disheveled, debilitated, bizarrely dressed
B. Evaluate vital signs.
    1. Is a particular toxidrome suggested, e.g.: symphathomimetic?
C. Note medic alert tags, breath odors suggesting intoxication.
D. Determine ability to relate to reality.
    1. Does the patient know who she is, where she is, who you are and why you are there?
    2. Does the patient appear to be hallucinating or responding to internal stimuli?
E. Note behavior. Consider known predictors of violence:
    1. Is the patient male, intoxicated, paranoid or displaying aggressive or threatening behavior or language?

Treatment

A. If patient agitated or combative, see Agitated/Combative Patient Protocol
B. Attempt to establish rapport
C. Assess ABCs
D. Transport to closest Emergency Department
E. Be alert for possible elopement
F. Consider organic causes of abnormal behavior (trauma, overdose, intoxication, hypoglycemia)
G. If patient restraint considered necessary for patient or EMS safety, refer to Restraint Protocol.
H. Check blood sugar
I. If altered mental status or unstable vital signs:
    1. Administer oxygen.
    2. Establish venous access.
    3. Refer to Universal Altered Mental Status Protocol.

Mental Health Holds

A. If a patient has an isolated mental health complaint (e.g. suicidality), and does not have a medical complaint or need specific medical intervention, then that patient may be appropriately transported by law enforcement according to their protocols.
B. If a patient has a psychiatric complaint with associated illness or injury (e.g. overdose, altered mental status, chest pain, etc), then the patient should be transported by EMS
C. If a patient with a psychiatric complaint is intoxicated or otherwise lacks decision making capacity for any other reason then no Mental Health Hold is needed and such a patient should be brought to an emergency department for evaluation and stabilization with implied consent.
D. If EMS is called to evaluate a patient with an isolated psychiatric complaint who is not

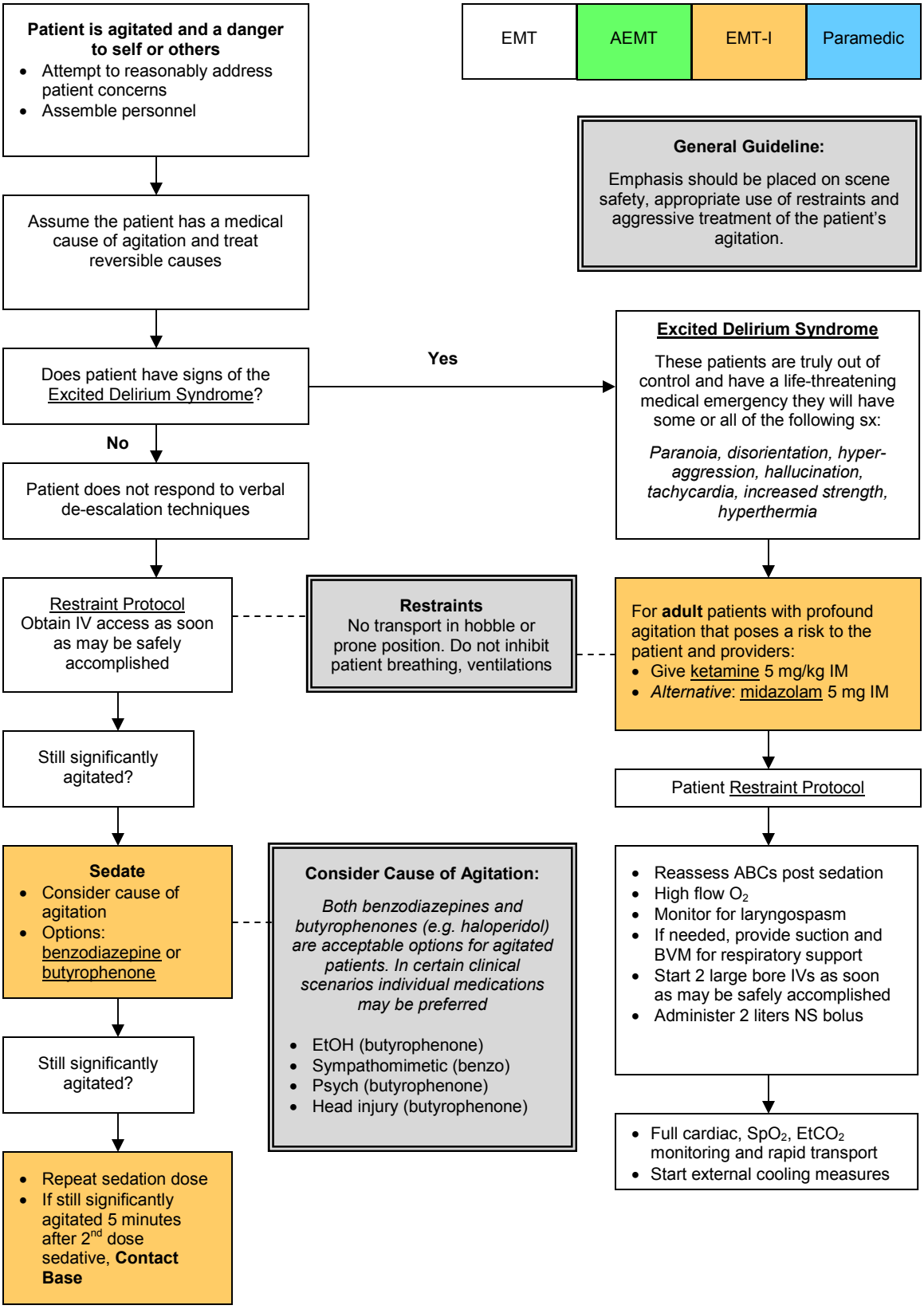
intoxicated, or otherwise lacking decision making capacity, and who refuses treatment or transport, *and* law enforcement are not willing to transport patient, then EMS should contact agency Base Station for medical consult with **BASE PHYSICIAN**.

E. If there is a reasonable concern for suicidal or homicidal ideation, or grave disability from another mental health condition, then **BASE PHYSICIAN** may give a verbal order placing the patient on a Mental Health Hold and direct EMS personnel to transport the patient against his or her will in accordance with Colorado State statutes. The physician's name, and time and date of the Mental Health Hold must be recorded on the PCR. Effort should be made to obtain consent for transport from the patient, and to preserve the patient's dignity throughout the process.
F. A patient being transported on a Mental Health Hold may be transported to any appropriate receiving emergency department, as it may not be operationally feasible to transport exclusively to the Base Station hospital, although this is preferred if time and conditions allow.
G. It is expected that receiving facilities will receive such patients and perform an appropriate evaluation to determine if continuation of a Mental Health Hold is indicated at the time of their assessment.
H. Although there is always a risk of accusations of kidnapping or assault in such cases, such accusations are extremely rare, and the Denver Metropolitan EMS Medical Directors feel strongly that the risk of abandonment of a potentially suicidal or otherwise gravely impaired patient far outweigh any theoretical risk of allegations of kidnapping when actions are taken in the interest of patient safety.

Specific Precautions

A. Psychiatric patients often have an organic basis for mental disturbances. Be suspicious of hypoglycemia, hypoxia, head injury, intoxication, or toxic ingestion.
B. If emergency treatment is unnecessary, do as little as possible except to reassure while transporting. Try not to violate the patient's personal space.
C. If the situation appears threatening, consider a show of force involving police before attempting to restrain.
D. Beware of weapons. These patients can become very violent.
E. An EMT, AEMT, Intermediate or paramedic may initiate a Mental Health Hold only by direct verbal order from the **BASE PHYSICIAN**.
F. Document name of **BASE PHYSICIAN**.

4075 AGITATED/COMBATIVE PATIENT PROTOCOL



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4076 TRANSPORT OF THE HANDCUFFED PATIENT

Purpose:

1. Guideline for transport of patients in handcuffs placed by law enforcement

Guideline:

1. Handcuffs are only to be placed by law enforcement. EMS personnel are not permitted to use handcuffs.
2. Request that law enforcement remain with the patient in the ambulance, if possible. If not possible, request that police ride behind ambulance so as to be readily available to remove handcuffs if needed in an emergency situation to facilitate medical care of the patient.
3. EMS personnel are not responsible for the law enforcement hold on these patients.
4. Handcuffed patients will not be placed in the prone position.
5. Handcuffs may be used with spinal immobilization. Medical priorities should take priority in the positioning of the handcuffs.

4080 CHILDBIRTH PROTOCOL

Overview:

- EMS providers called to a possible prehospital childbirth should determine if there is enough time to transport expectant mother to hospital or if delivery is imminent
- If imminent, **stay on scene** and immediately prepare to assist with the delivery

ABCs
O_2 15 liters via NRB
IV access

EMT	AEMT	EMT-I	Paramedic

Obtain obstetrical history (see adjacent)

Specific Information Needed:

- Obstetrical history:
  - Number of pregancies (gravida)
  - Live births (PARA)
  - Expected delivery date
  - Length of previous labors
  - Narcotic use in past 4 hours

If suspected imminent childbirth:

- Allow patient to remain in position of comfort
- Visualize perineum
- Determine if there is time to transport

Imminent Delivery

Delivery is imminent if there is crowning or bulging of perineum

Delivery not imminent

- Transport in position of comfort, preferably on left side to patient's requested hospital if time and conditions allow
- Monitor for progression to imminent delivery

Emergency Childbirth Procedure

- If there is a prolapsed umbilical cord or apparent breech presentation, go to obstetrical complications protocol and initiate immediate transport
- For otherwise uncomplicated delivery:
- Position mother supine on flat surface, if possible
- Do not attempt to impair or delay delivery
- Support and control delivery of head as it emerges
- Protect perineum with gentle hand pressure
- Check for cord around neck, gently remove from around neck, if present
- Suction mouth, then nose of infant as soon as head is delivered
- If delivery not progressing, baby is "stuck", see obstetrical complications protocol and begin immediate transport
- As shoulders emerge, gently guide head and neck downward to deliver anterior shoulder. Support and gently lift head and neck to deliver posterior shoulder
- Rest of infant should deliver with passive participation – get a firm hold on baby
- Keep newborn at level of mother's vagina until cord stops pulsating and is double clamped

Critical Thinking:

- Normal pregnancy is accompanied by higher heart rates and lower blood pressures
- Shock will be manifested by signs of poor perfusion
- Labor can take 8-12 hours, but as little as 5 minutes if high PARA
- The higher the PARA, the shorter the labor is likely to be
- High risk factors include: no prenatal care, drug use, teenage pregnancy, DM, htn, cardiac disease, prior breech or C section, preeclampsia, twins
- Note color of amniotic fluid for meconium staining

Postpartum Care Infant

- Suction mouth and nose only if signs of obstruction by secretions
- Respirations should begin within 15 seconds after stimulating reflexes. If not, begin artificial ventilations at 30-40 breaths/min
- If apneic, cyanotic or HR < 100, begin neonatal resuscitation
- Dry baby and wrap in warm blanket
- After umbilical cord stops pulsating, double clamp 6" from infant abdominal wall and cut between clamps with sterile scalpel. If no sterile cutting instrument available, lay infant on mother's abdomen and do not cut clamped cord
- Document 1 and 5 minute APGAR scores

Postpartum Care Mother

- Placenta should deliver in 20-30 minutes. If delivered, collect in plastic bag and bring to hospital. Do not pull cord to facilitate placenta delivery and do not delay transport awaiting placenta delivery
- If the perineum is torn and bleeding, apply direct pressure with sanitary pads
- Postpartum hemorrhage – see obstetrical complications protocol
- Initiate transport once delivery of child is complete and mother can tolerate movement

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4081 OBSTETRICAL COMPLICATIONS

EMT	AEMT	EMT-I	Paramedic

For All Patients with obstetrical complications

- Do not delay: immediate rapid transport
- Give high-flow oxygen
- Start IV en route if time and conditions allow. Treat signs of shock w. IV fluid boluses per Medical Hypotension/Shock Protocol

Possible actions for specific complications (below)

- The following actions may not be feasible in every case, nor may every obstetrical complication by anticipated or effectively managed in the field. These should be considered "best advice" for rare, difficult scenarios. In every case, initiate immediate transport to definite care at hospital

Prolapsed Umbilical Cord

- Discourage pushing by mother
- Position mother in Trendelenberg or supine with hips elevated
- Place gloved hand in mother's vagina and elevate the presenting fetal part off of cord until relieved by physician
- Feel for cord pulsations
- Keep exposed cord moist and warm

Breech Delivery

- Never attempt to pull infant from vagina by legs
- IF legs are delivered gently elevate trunk and legs to aid delivery of head
- Head should deliver in 30 seconds. If not, reach 2 fingers into vagina to locate infant's mouth. Press vaginal wall away from baby's mouth to access an airway
- Apply gentle abdominal pressure to uterine fundus
- IF infant delivered see childbirth protocol – Postpartum care of infant and mother

Postpartum Hemorrhage

- Massage abdomen (uterine fundus) until firm
- Initiate rapid transport
- Note type and amount of bleeding
- Treat signs of shock with IV fluid boluses

Complications of Late Pregnancy

3rd Trimester Bleeding (6-8 months)

- High flow O_2 via NRB, IV access
- Suspect placental abruption or placenta previa
- Initiate rapid transport
- Position patient on left side
- Note type and amount of bleeding
- IV NS bolus for significant bleeding or shock

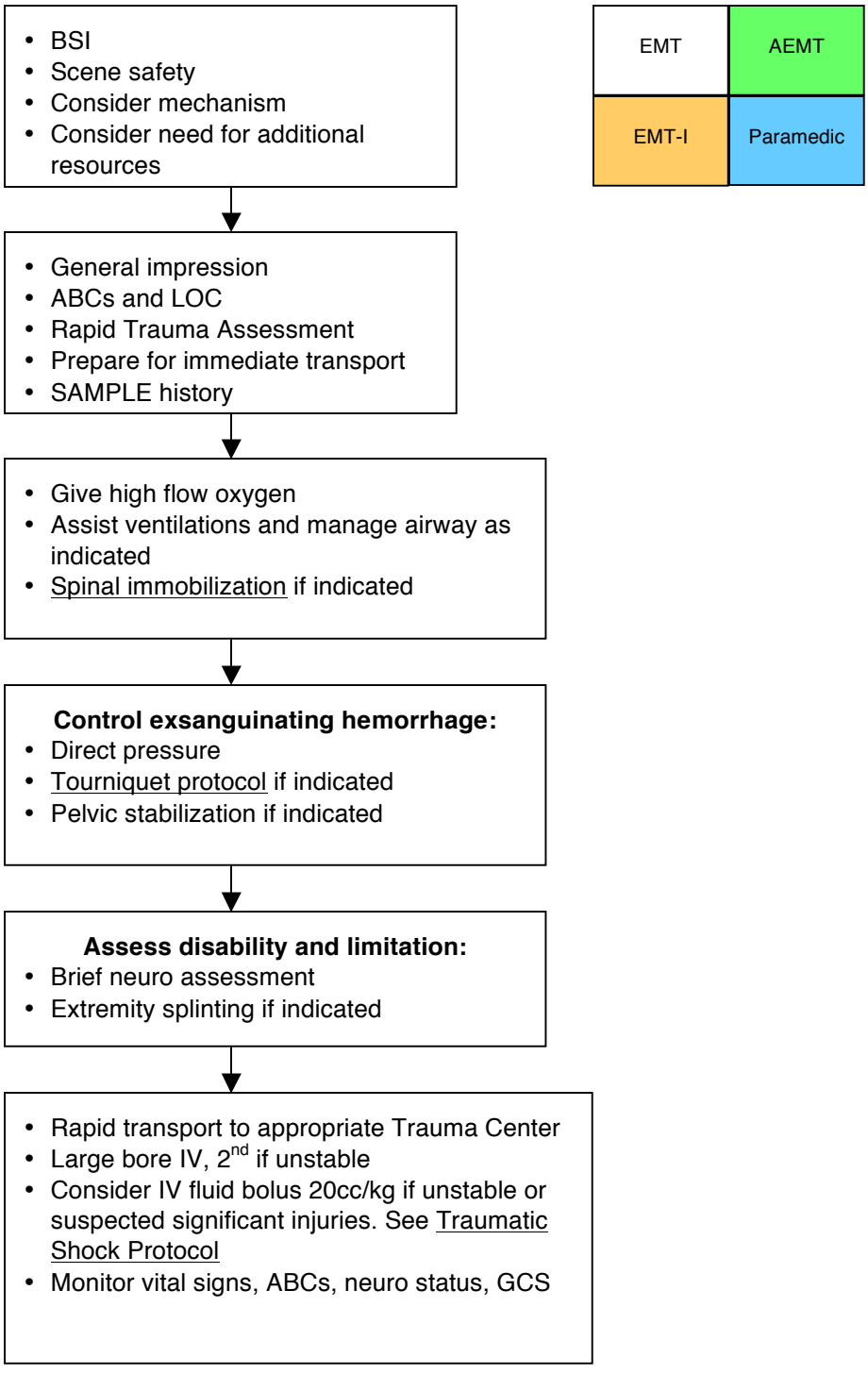
Eclampsia/Toxemia

- High flow O_2 via NRB, IV access
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort
- Treat seizures with Magnesium Sulfate 2 gm slow IV push followed by 4 gm IV over 15-30 minutes (total 6 gm)
- See seizure protocol

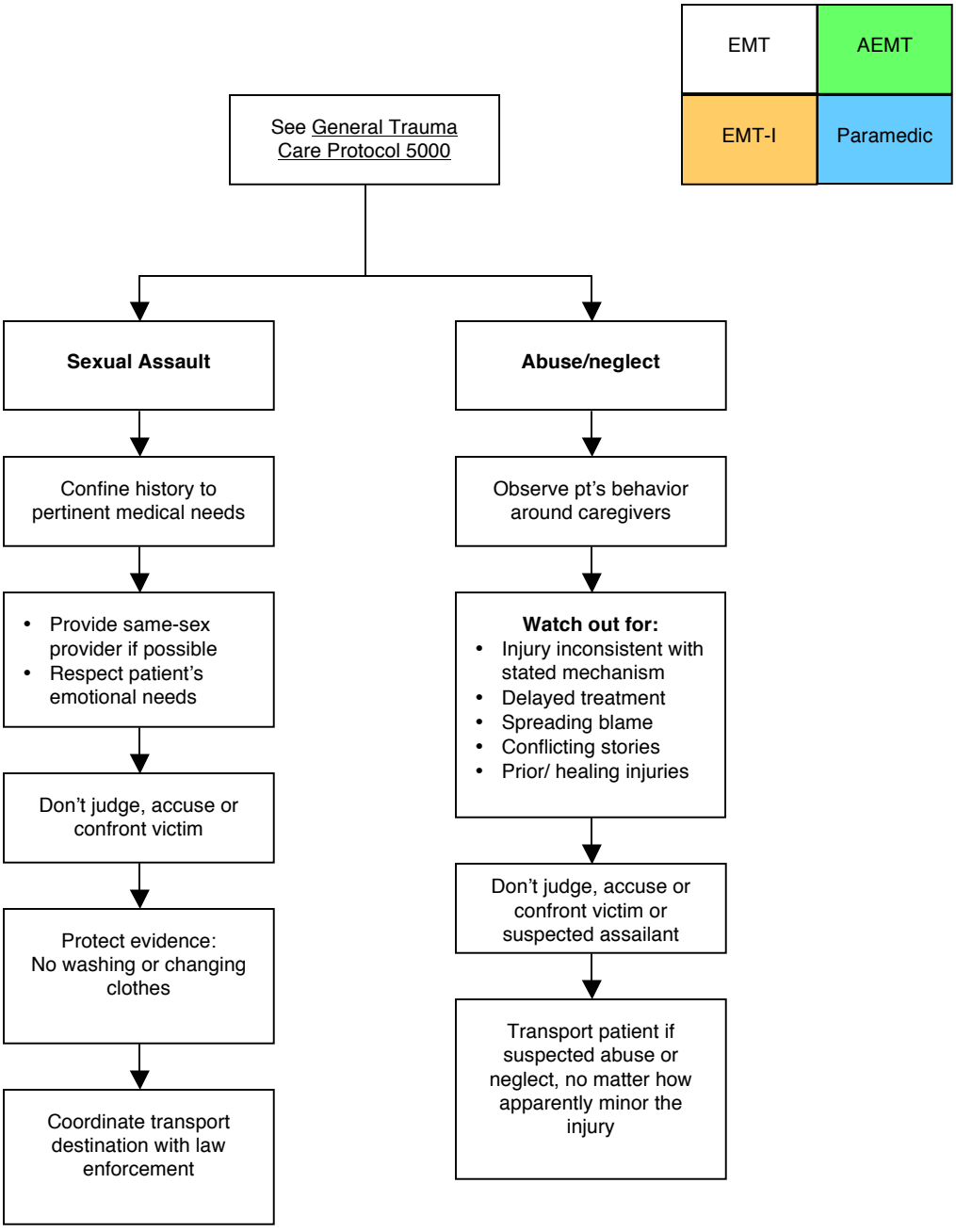
Shoulder Dystocia

- Support baby's head
- Suction oral and nasal passages
- DO NOT pull on head
- May facilitate delivery by placing mother with buttocks just off the end of bed, flex her thighs upward and gentle open hand pressure above the pubic bone
- IF infant delivered see childbirth protocol – Postpartum care of infant and mother

5000 GENERAL TRAUMA CARE



5005 SPECIAL TRAUMA SCENARIOS PROTOCOL



5006 TRAUMA IN PREGNANCY

EMT	AEMT
EMT-I	Paramedic

See General Trauma Care Protocol 5000

Pregnant Trauma (EGA < 20 weeks)

- Priority is mother.
- Transport all patients with any thoracic, abdominal, pelvic injury or complaint.

Pregnant Trauma (EGA ≥ 20 weeks)

- Priority is mother.
- Transport all patients.
- Assure hospital is aware of pregnancy and EGA

Patients with any thoracic, abdominal, or pelvic complaint or injury may require prolonged fetal monitoring in hospital, even if asymptomatic at time of evaluation, and even for seemingly minor mechanism

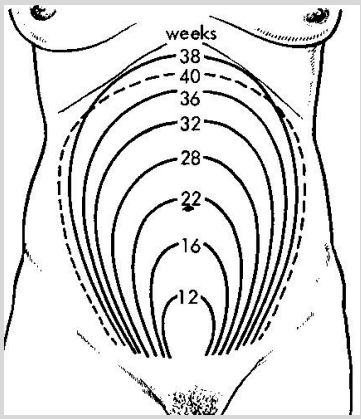
- Avoid supine position:
  - Place in left lateral recumbent position if possible
  - If immobilized tilt backboard 15 to 30 degrees to the left side

Interpret VS with caution. Pregnant patient has:

- *Increased heart rate*
- *Decreased blood pressure*
- *Increased blood volume*

Estimated Gestational Age (EGA)

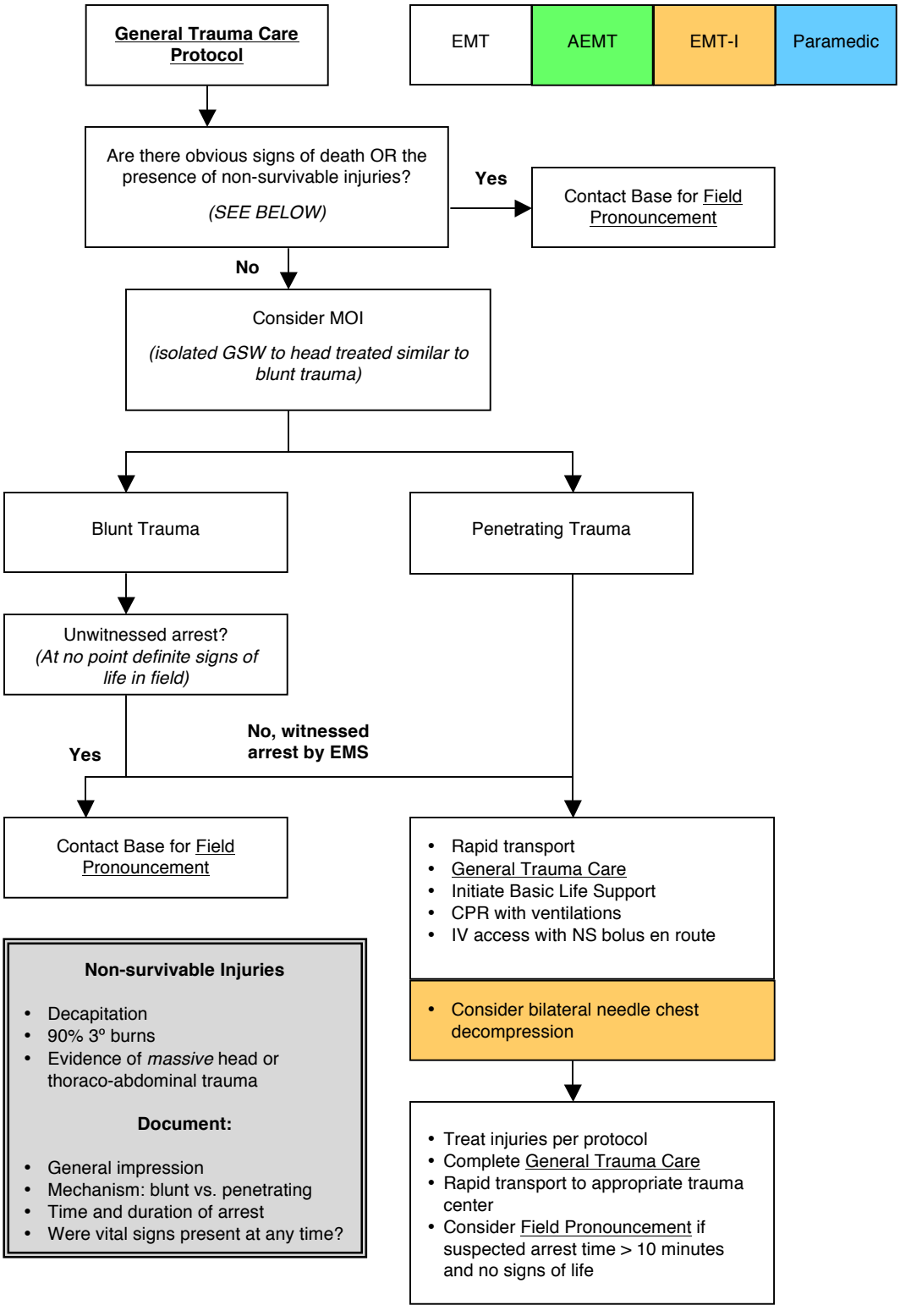
If EGA ≥ 20 weeks, consider two patients: mother and fetus. Estimation of gestational age may be made based on fundal height by palpating for top of uterus:



If uterus is at umbilicus then EGA > 20 weeks

Estimation by Last Menstrual Period:
Due Date = LMP + 9 months + 7 days
EGA = due date – current date

5010 ADULT (AGE ≥ 12 YEARS) TRAUMATIC PULSELESS ARREST



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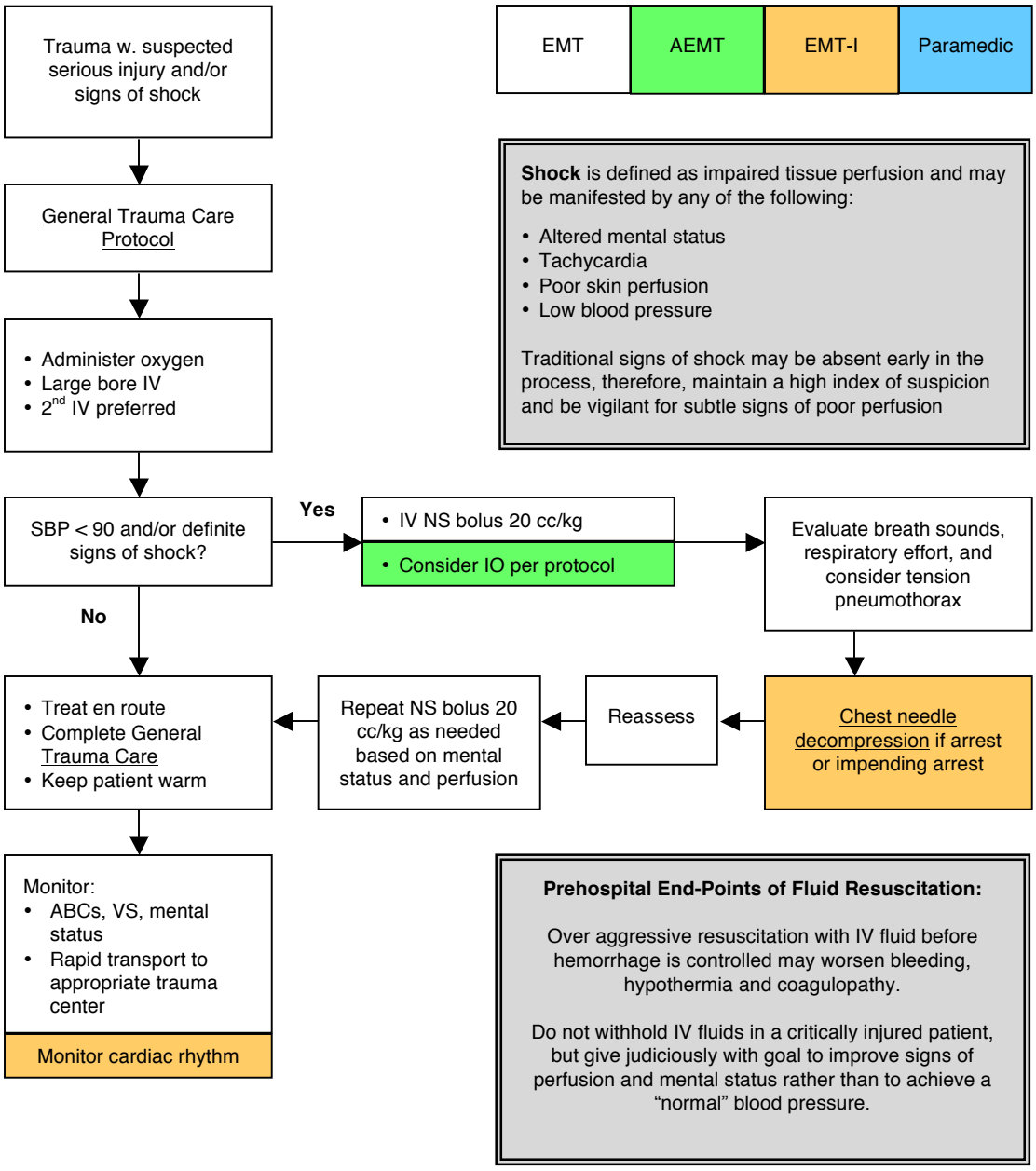
5015 ADULT (AGE ≥ 12 YEARS) TRAUMATIC SHOCK PROTOCOL



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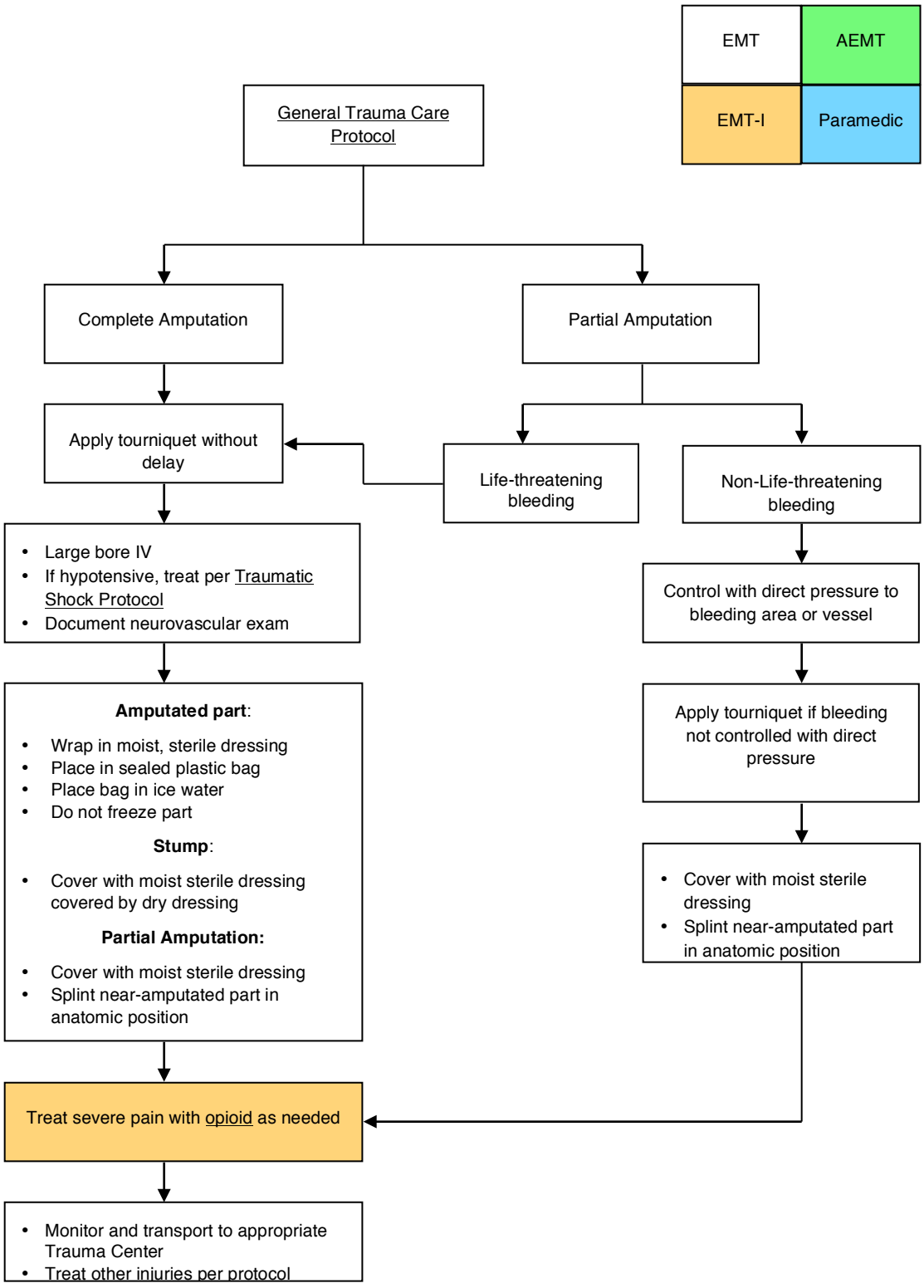
5020 AMPUTATIONS



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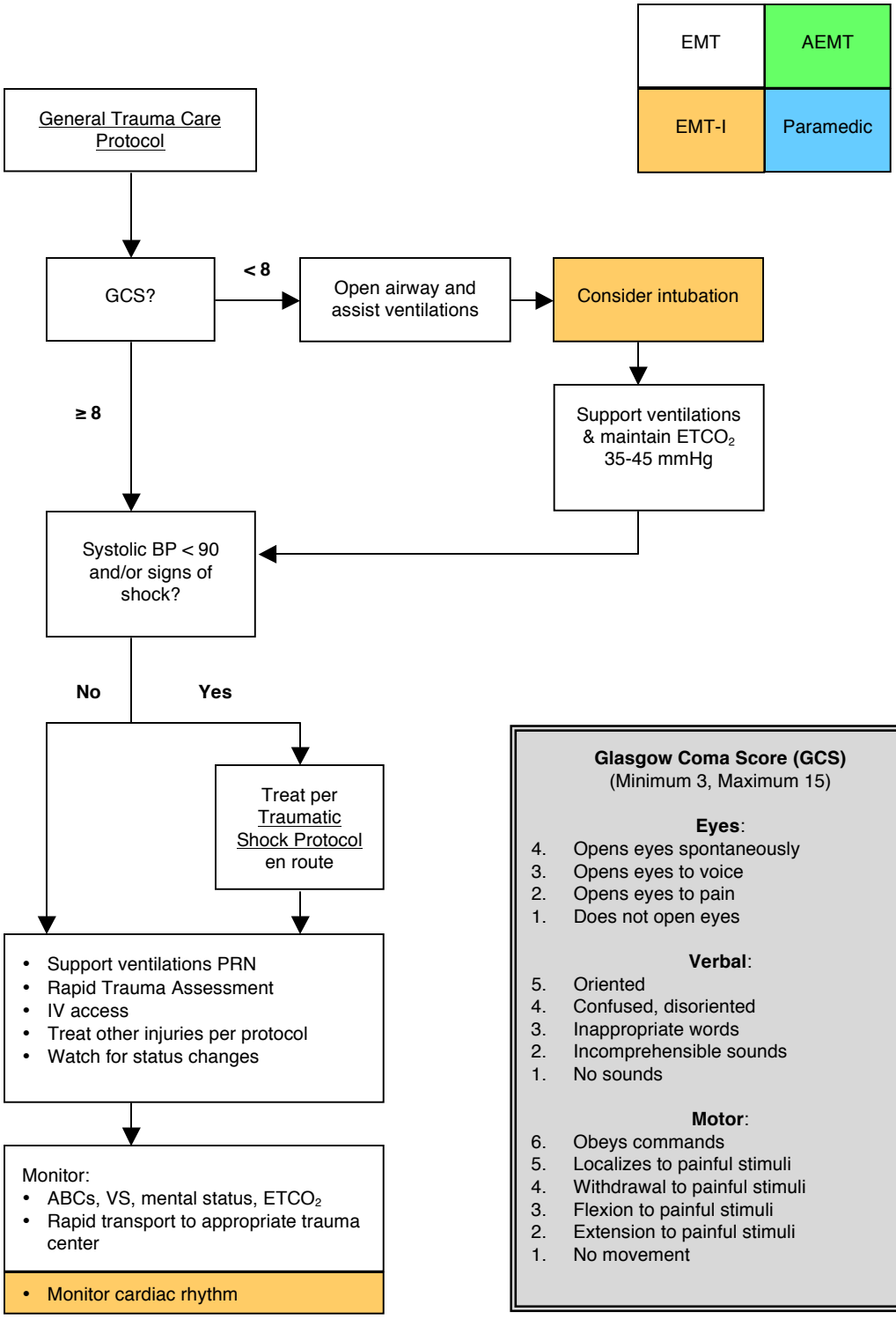
5030 HEAD TRAUMA PROTOCOL



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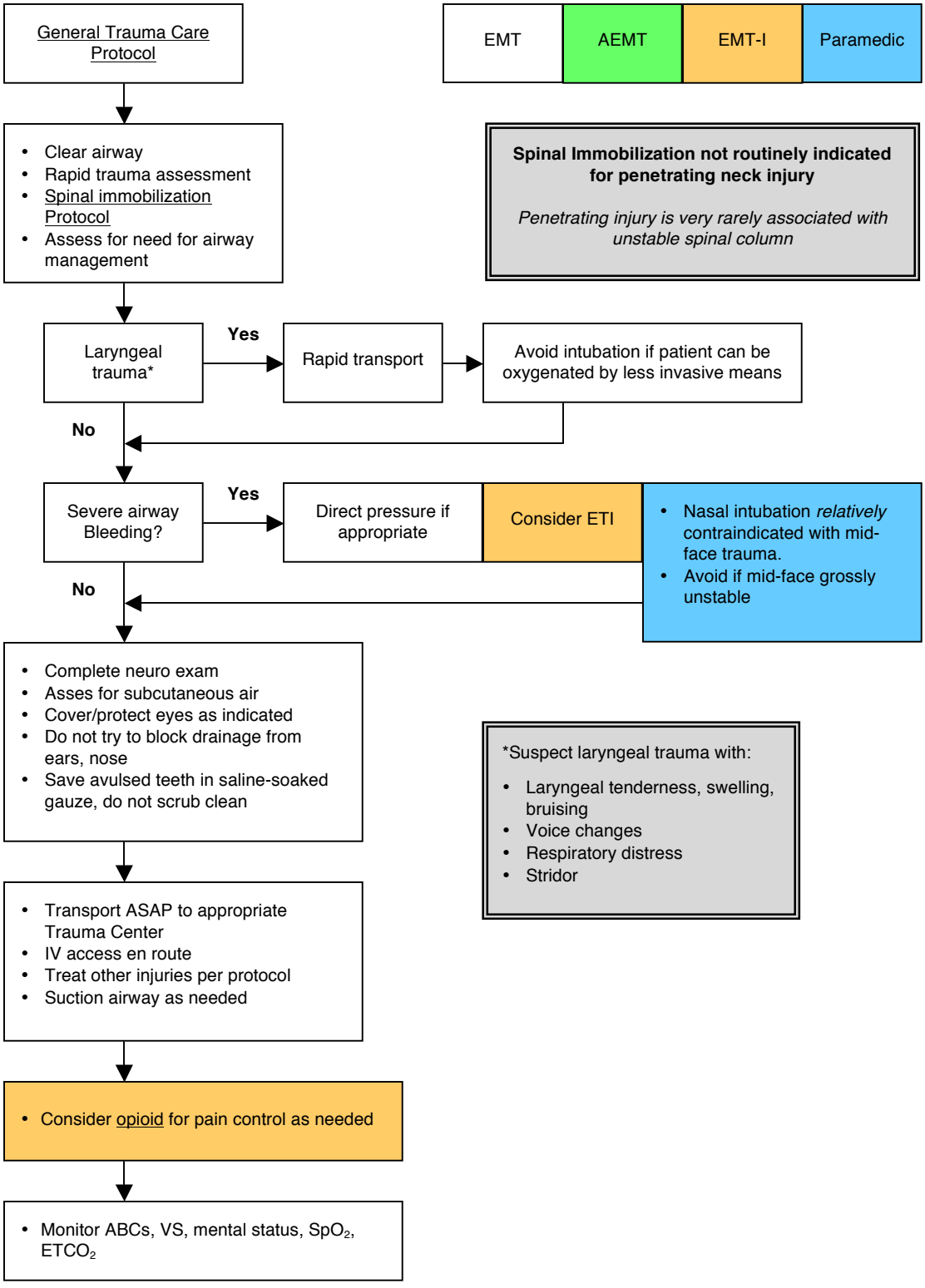
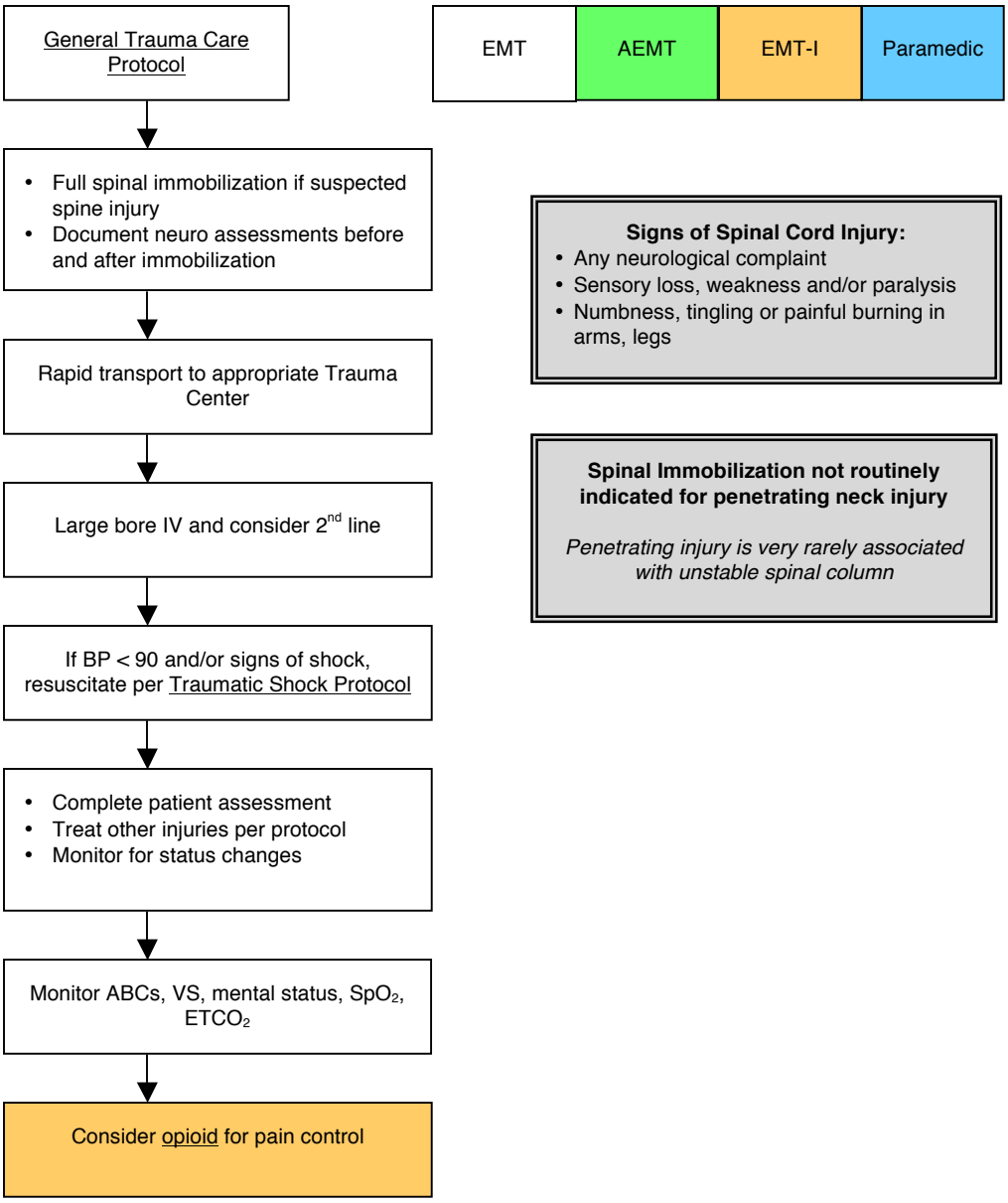
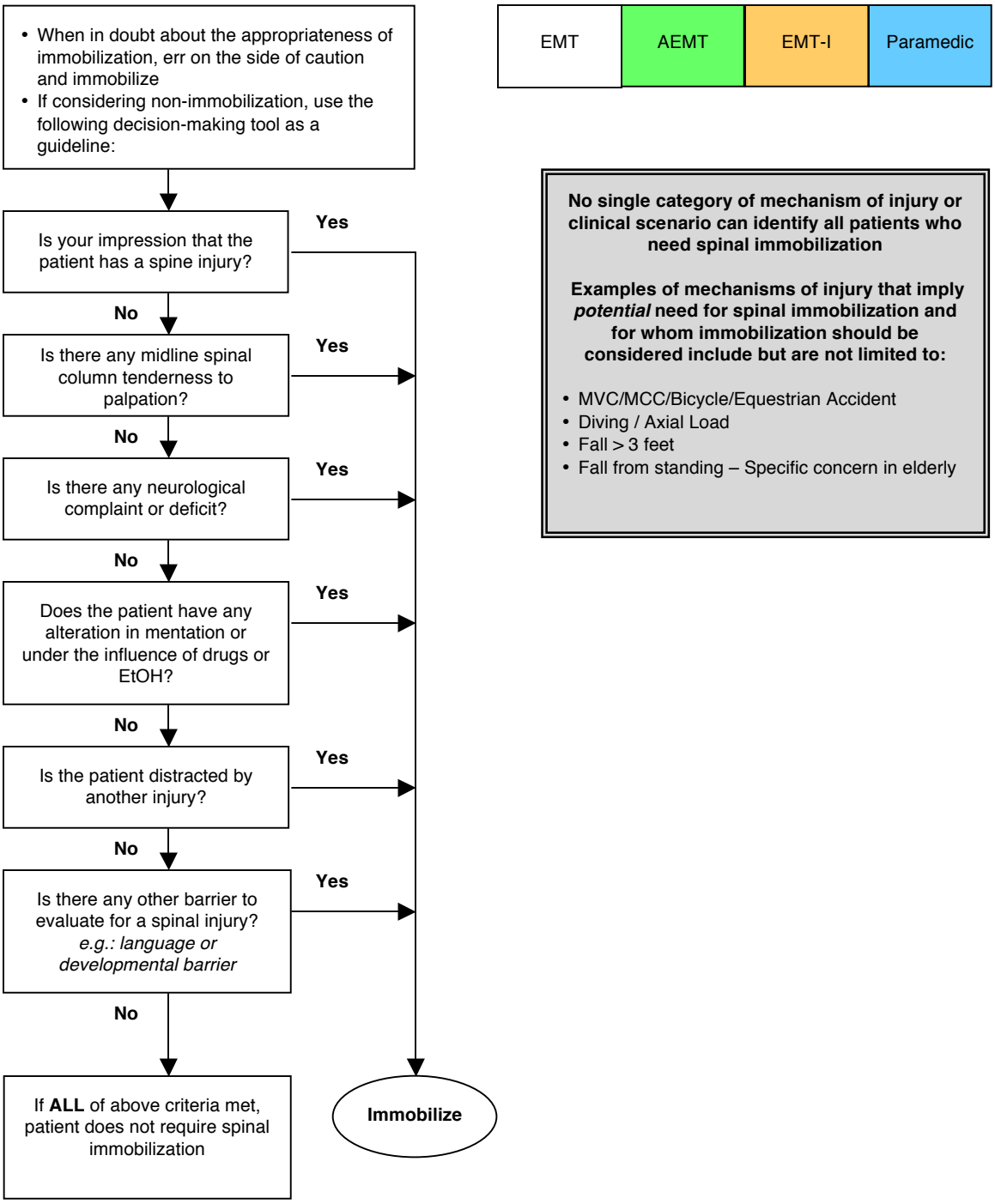
5040 FACE AND NECK TRAUMA



5050 ADULT SPINAL TRAUMA



5055 ADULT (AGE ≥ 12 YEARS) SPINAL IMMOBILIZATION PROTOCOL



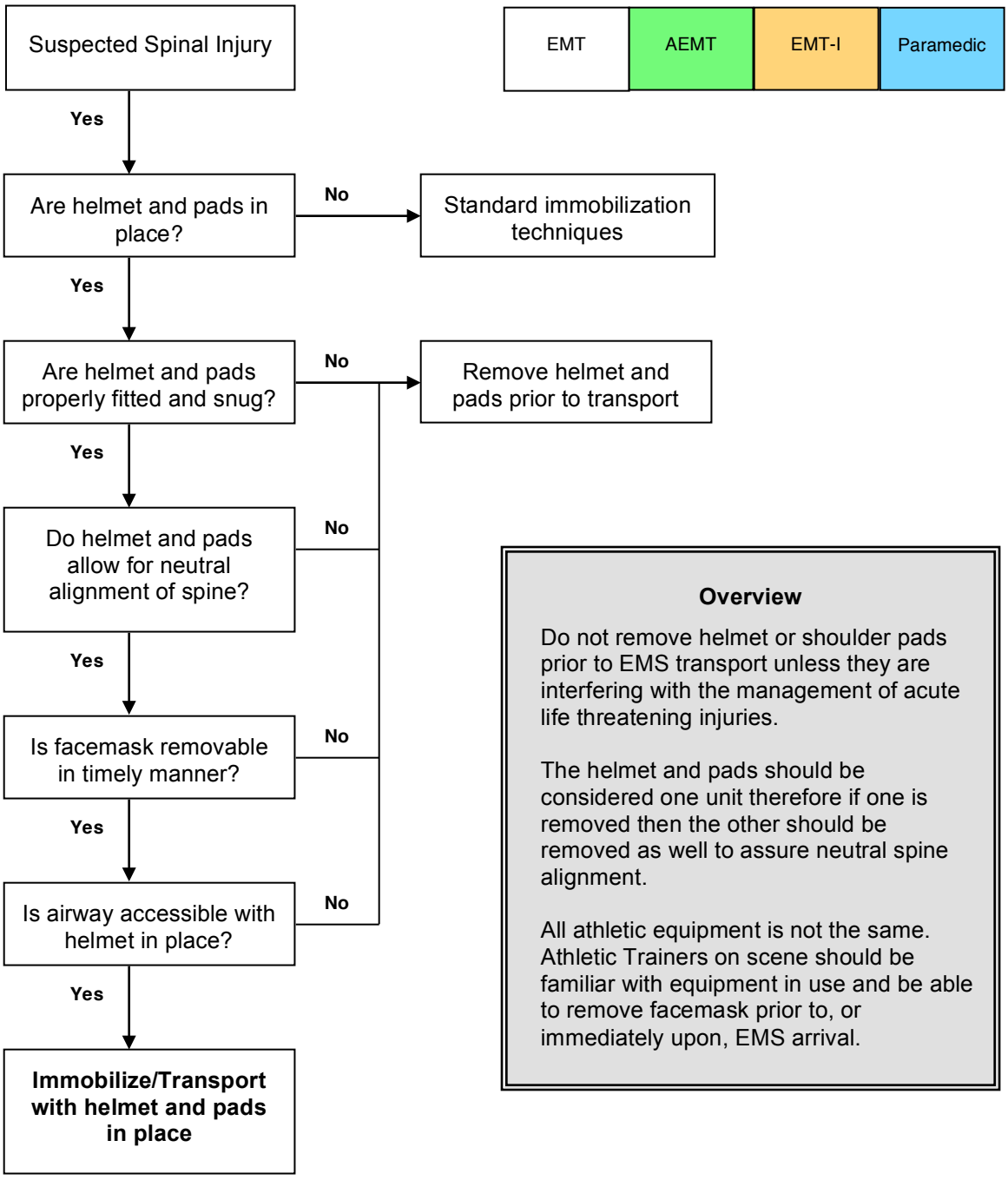
EMT	AEMT	EMT-I	Paramedic

No single category of mechanism of injury or clinical scenario can identify all patients who need spinal immobilization

Examples of mechanisms of injury that imply *potential* need for spinal immobilization and for whom immobilization should be considered include but are not limited to:

- MVC/MCC/Bicycle/Equestrian Accident
- Diving / Axial Load
- Fall > 3 feet
- Fall from standing – Specific concern in elderly

5056 SUSPECTED SPINAL INJURY WITH PROTECTIVE ATHLETIC EQUIPMENT IN PLACE



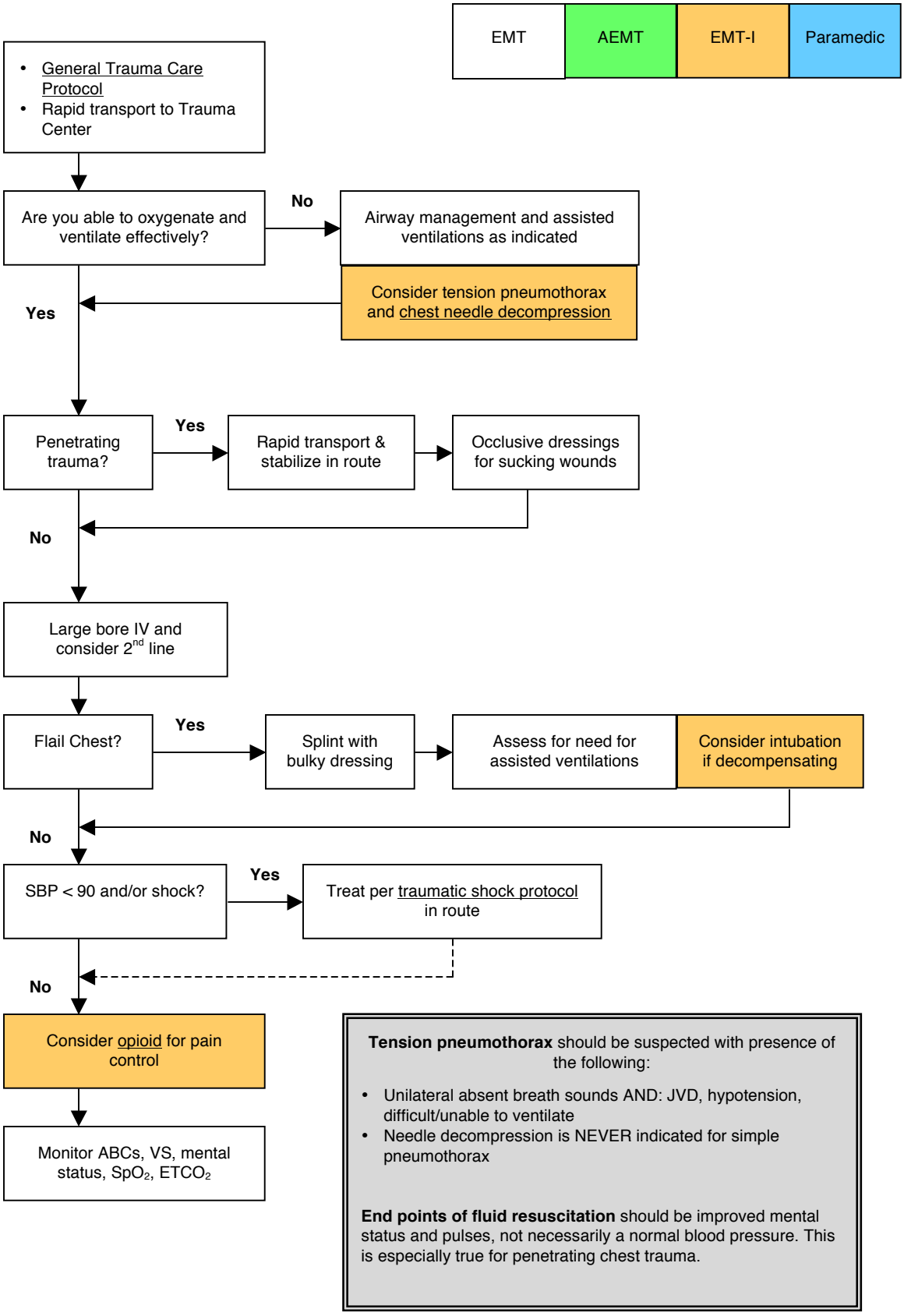
Overview

Do not remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life threatening injuries.

The helmet and pads should be considered one unit therefore if one is removed then the other should be removed as well to assure neutral spine alignment.

All athletic equipment is not the same. Athletic Trainers on scene should be familiar with equipment in use and be able to remove facemask prior to, or immediately upon, EMS arrival.

5060 CHEST TRAUMA



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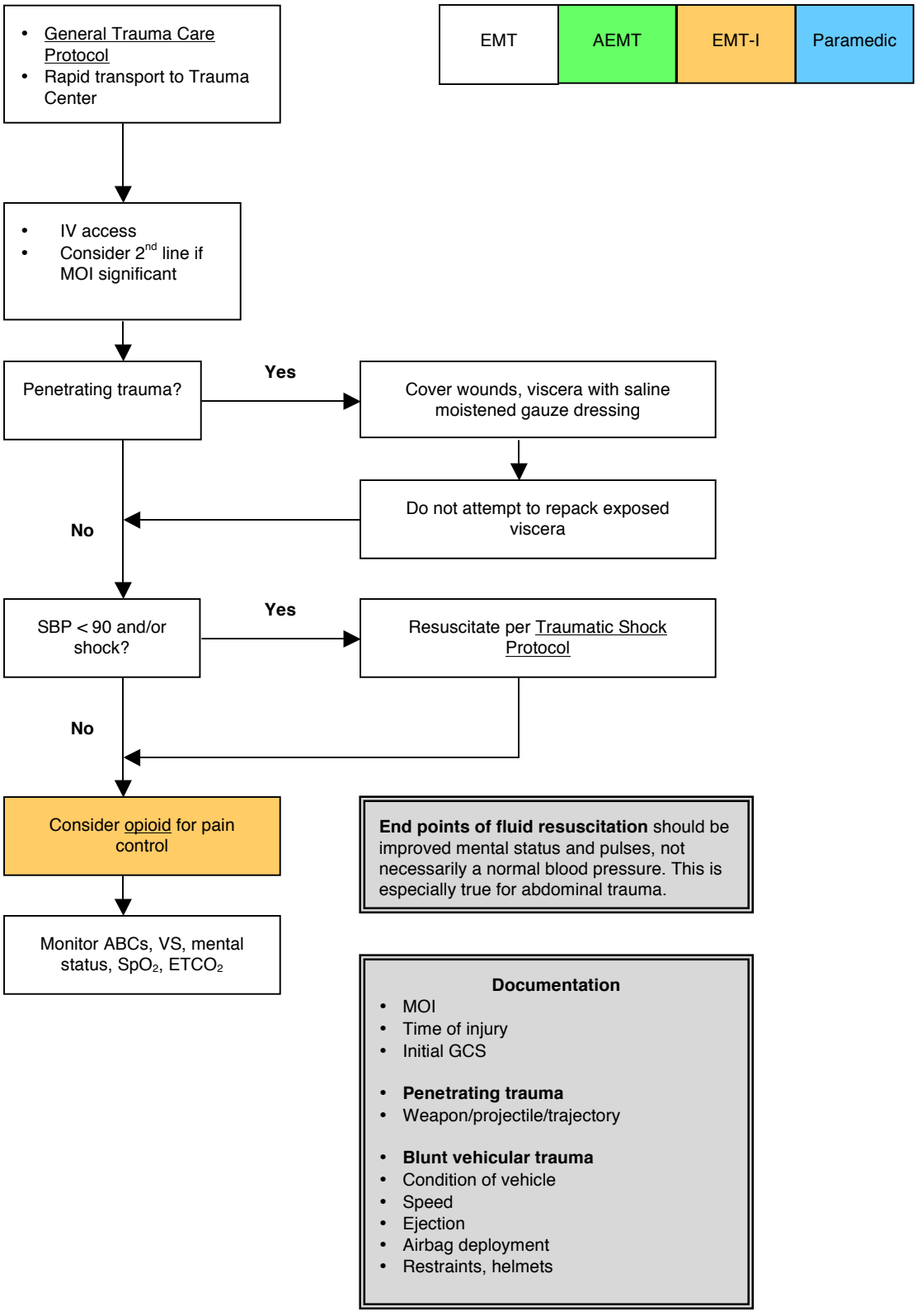
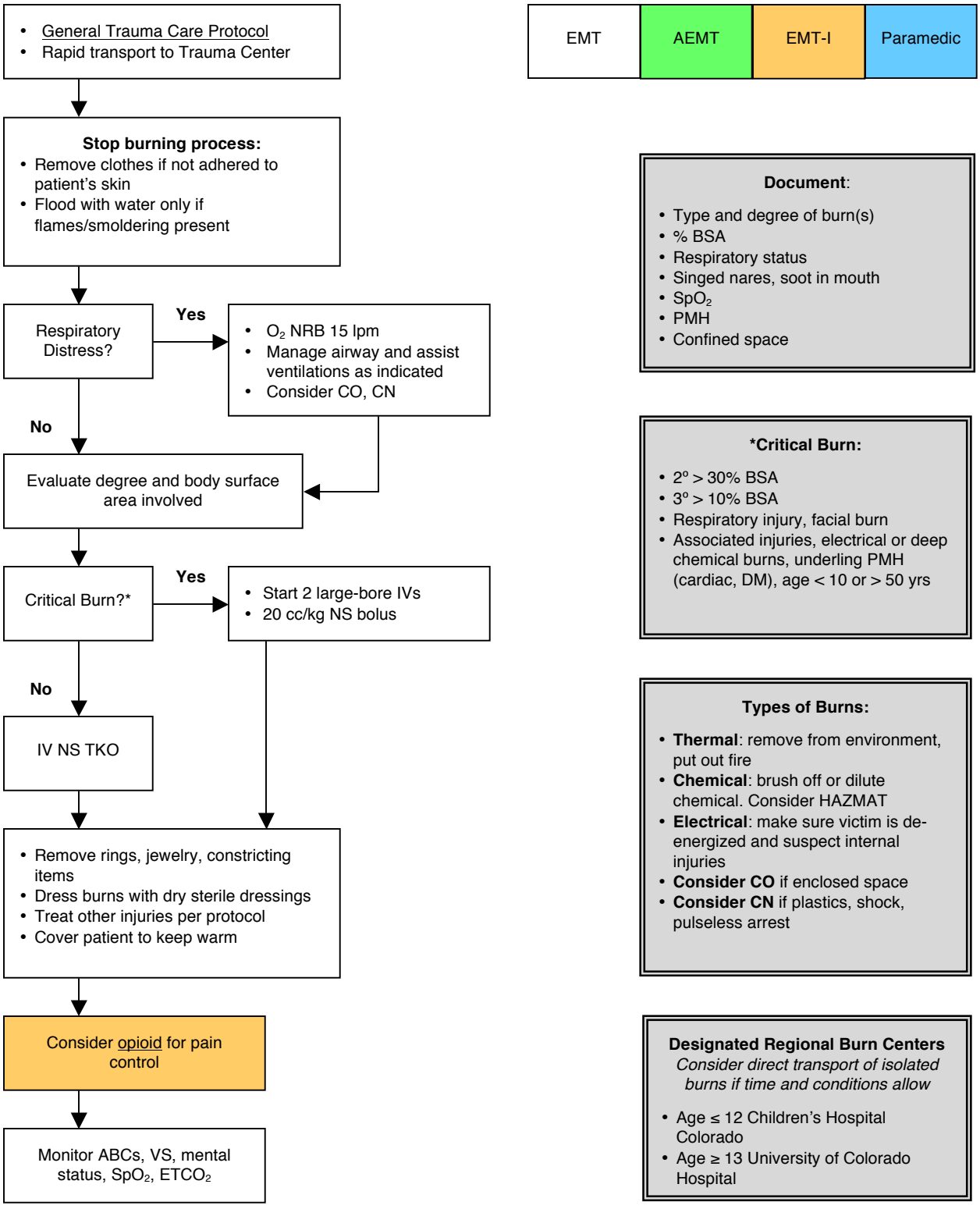
5070 ABDOMINAL TRAUMA



5090 BURNS



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6000 GENERAL GUIDELINES FOR PEDIATRIC PATIENTS

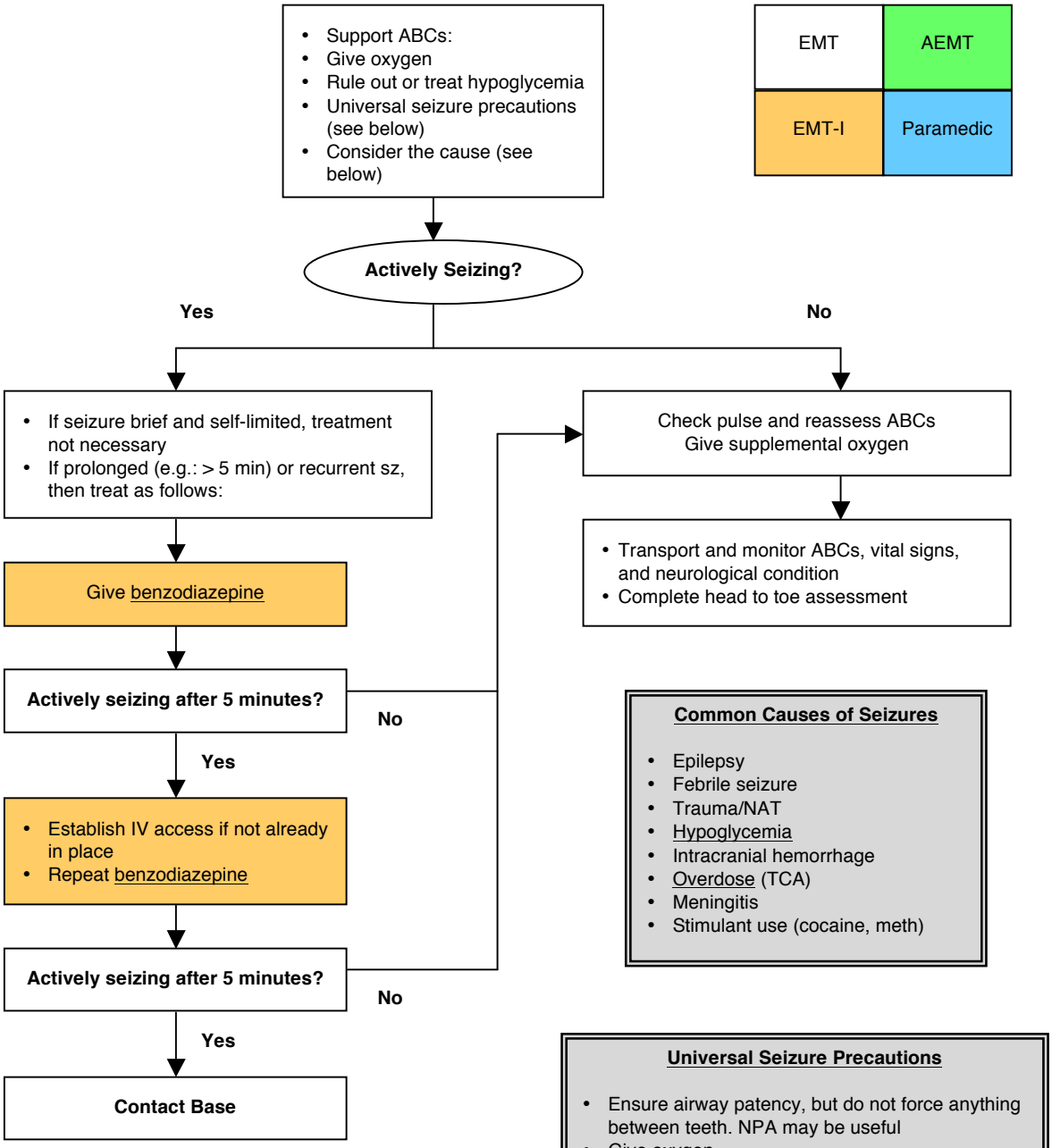
General Guideline:

A. Pediatric patients, defined as age < 12 years for the purpose of these protocols, have unique anatomy, physiology, and developmental needs that affect prehospital care. Because children make up a small percentage of total calls and few pediatric calls are critically ill or injured, it is important to stay attuned to these differences to provide good care. Therefore, **CONTACT BASE** early for guidance when treating pediatric patients with significant complaints, including abnormalities of vital signs. Pediatric emergencies are usually not preceded by chronic disease. If recognition of compromise occurs early, and intervention is swift and effective, the child will often be restored to full health.

Specific Considerations:

A. The following should be kept in mind during the care of children in the prehospital setting:
    1. Airways are smaller, softer, and easier to obstruct or collapse.
    2. Respiratory reserves are small. A minor insult like improper position, vomiting, or airway narrowing can result in major deficits in ventilation and oxygenation.
    3. Circulatory reserves are also small. The loss of as little as one unit of blood can produce severe shock in an infant. Conversely, it is difficult to fluid overload most children. You can be confident that a good hands-on circulation assessment will determine fluid needs accurately.
    4. Assessment of the pediatric patient can be done using your knowledge of the anatomy and physiology specific to infants and children.
    5. Listen to the parents' assessment of the patient's problem. They often can detect small changes in their child's condition. This is particularly true if the patient has chronic disease.
    6. The proper equipment is very important when dealing with the pediatric patient. A complete selection of pediatric airway management equipment, IV catheters, cervical collars, and drugs has been mandated by the state. This equipment should be stored separately to minimize confusion.

6005 PEDIATRIC SEIZURE (< 12 YEARS)



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6010 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL PRINCIPLES

General Guideline:

A. Pediatric cardiac arrest more frequently represents progressive respiratory deterioration or shock rather than primary cardiac etiologies. Unrecognized deterioration may lead to bradycardia, agonal breathing, and ultimately asystole. Resulting hypoxic and ischemic insult to the brain and other vital organs make neurologic recovery extremely unlikely, even in the doubtful event that the child survives the arrest. Children who respond to rapid intervention with ventilation and oxygenation alone or to less than 5 minutes of advanced life support are much more likely to survive neurologically intact. Therefore, it is essential to recognize the child who is at risk for progressing to cardiopulmonary arrest and to provide aggressive intervention before asystole occurs

Specific Information Needed For Patient Care Report

A. Onset (witnessed or unwitnessed), preceding symptoms, bystander CPR, downtime before CPR and duration of CPR
B. Past History: medications, medical history, suspicion of ingestion, trauma, environmental factors (hypothermia, inhalation, asphyxiation)

Document Specific Objective Findings

A. Unconscious, unresponsive
B. Agonal, or absent respirations
C. Absent pulses
D. Any signs of trauma, blood loss
E. Skin temperature

General Treatment Guidelines

A. Treat according to Pediatric BLS and ALS pulseless arrest algorithms
B. Primary cardiac arrest from ventricular arrhythmia, while less common than in adults, does occur in children. If history suggests primary cardiac event (e.g.: sudden collapse during exercise), then rapid defibrillation is most effective treatment
C. Most pediatric pulseless arrest is the result of primary asphyxial event, therefore initial sequence is chest compressions **with** ventilations, unlike adult pulseless arrest
D. Call for ALS assistance if not already on scene or responding

General Guidelines: Chest Compressions for 2 Rescuers

Once advanced airway in place, chest compressions should be given continually with ventilations at 8-10/minute

Neonate (≤ 1 month old)

A. 1 cycle of CPR = 3:1 chest compressions: breaths.

Infant and Child (1 month to 12 years old)

A. 1 cycle of CPR = 15:2 chest compressions: breaths

B. Push hard and fast at a compression rate of 100/minute
C. Minimize interruption to chest compressions
    a. Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks. Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check

   b. Increase in compression interruption correlates with decrease in likelihood of successful defibrillation
D. Ensure full chest recoil
   a. Represents diastolic phase for cardiac filling due to negative intrathoracic pressure
E. Avoid hyperventilation
   a. Associated with barotrauma and air trapping
   b. Makes CPR less effective by inhibiting cardiac output by increasing intrathoracic pressure and decreasing venous return to the heart
F. Rotate compressors every 2 minutes during rhythm checks

General Guidelines: Defibrillation

A. First shock delivered at 2 J/kg biphasic
B. All subsequent shocks delivered at 4 J/kg biphasic

General Guidelines: Ventilation during CPR

A. Do not interrupt chest compressions and do not hyperventilate
B. Contrary to adult cardiac arrest, pediatric arrest is much more likely to be asphyxial and prolonged. During this period, blood continues to flow to the tissues causing oxygen saturation to decrease and carbon dioxide to increase. Pediatric patients need both prompt ventilation and chest compressions.
C. Hyperventilation decreases effectiveness of CPR and worsens outcome

General Guidelines: Timing Of Placement Of Advanced Airway

A. ***BVM is preferred method of ventilation in all pediatric patients age < 8 years***
B. A supraglottic airway (e.g. King) may be placed at any point in resuscitation in patients ≥ 8 years old and may be considered equivalent to, but not superior to, BVM for ages 8-12
C. Do not hyperventilate
D. Always confirm advanced airway placement by objective criteria: $ETCO_2$
   a. Use continuous waveform capnography if available

General Guidelines: Pacing

A. Effectiveness of transcutaneous pediatric pacing has not been established and is not recommended

General Guidelines: ICD/Pacemaker patients

A. If cardiac arrest patient has an implantable cardioverter defibrillator (ICD) or pacemaker: place pacer/defib pads at least 1 inch from device. Biaxillary pad placement may be used

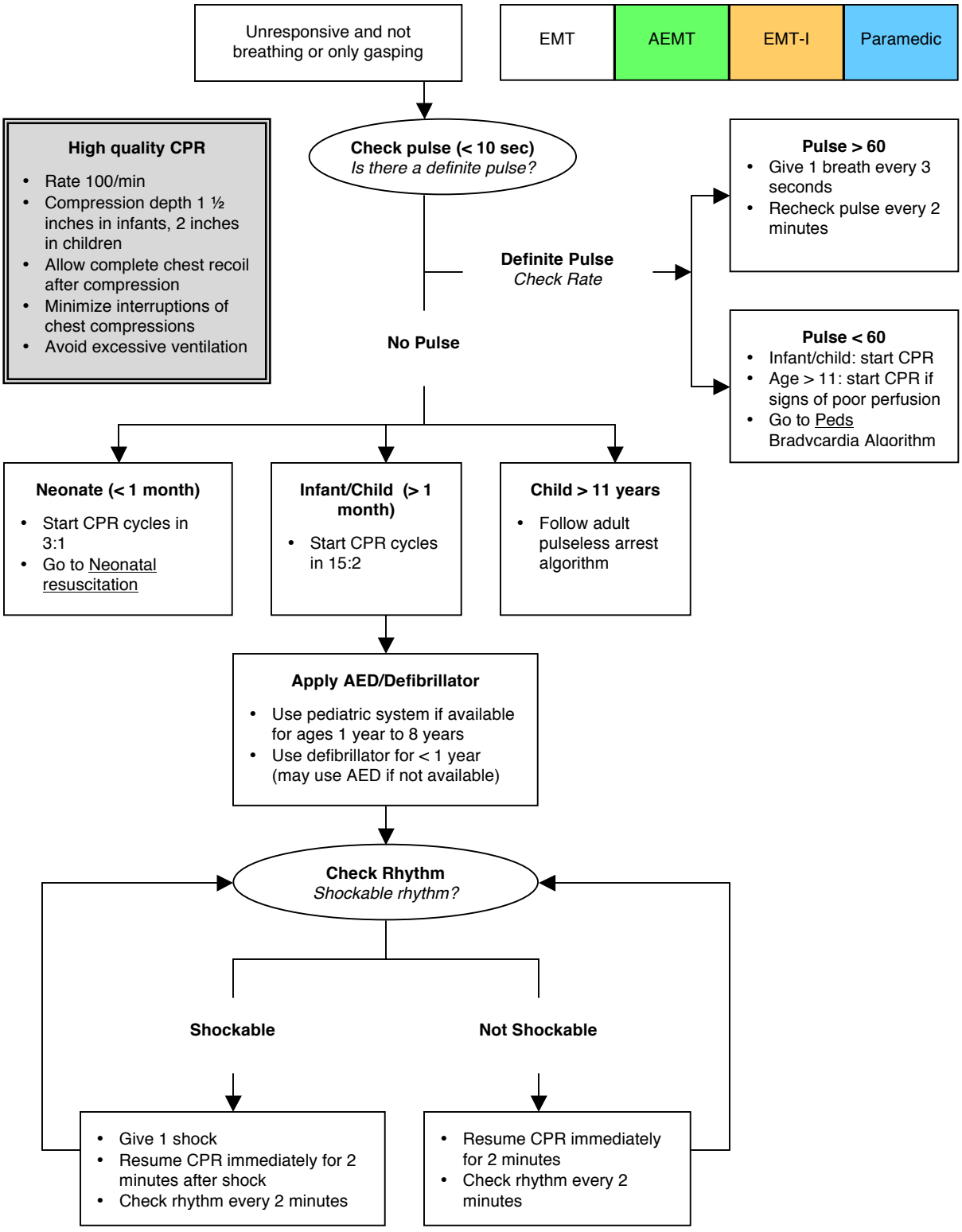
Special Notes:

A. Consider reversible causes of cardiac arrest ("Hs And Ts"):

Hypovolemia	IV Fluid bolus
Hypoxia	Ventilation
Hydrogen Ion (acidosis)	Ventilation
Hyperkalemia	Sodium bicarbonate
Hypothermia	See hypothermia protocol

Toxins: e.g.: opioid overdose	Naloxone 2mg IVP
Tamponade (cardiac)	
Tension pneumothorax	Needle thoracostomy
Thrombosis (coronary)	
Trauma	

6015 PEDIATRIC (AGE < 12 YEARS) PULSELESS ARREST BLS/AED ALGORITHM



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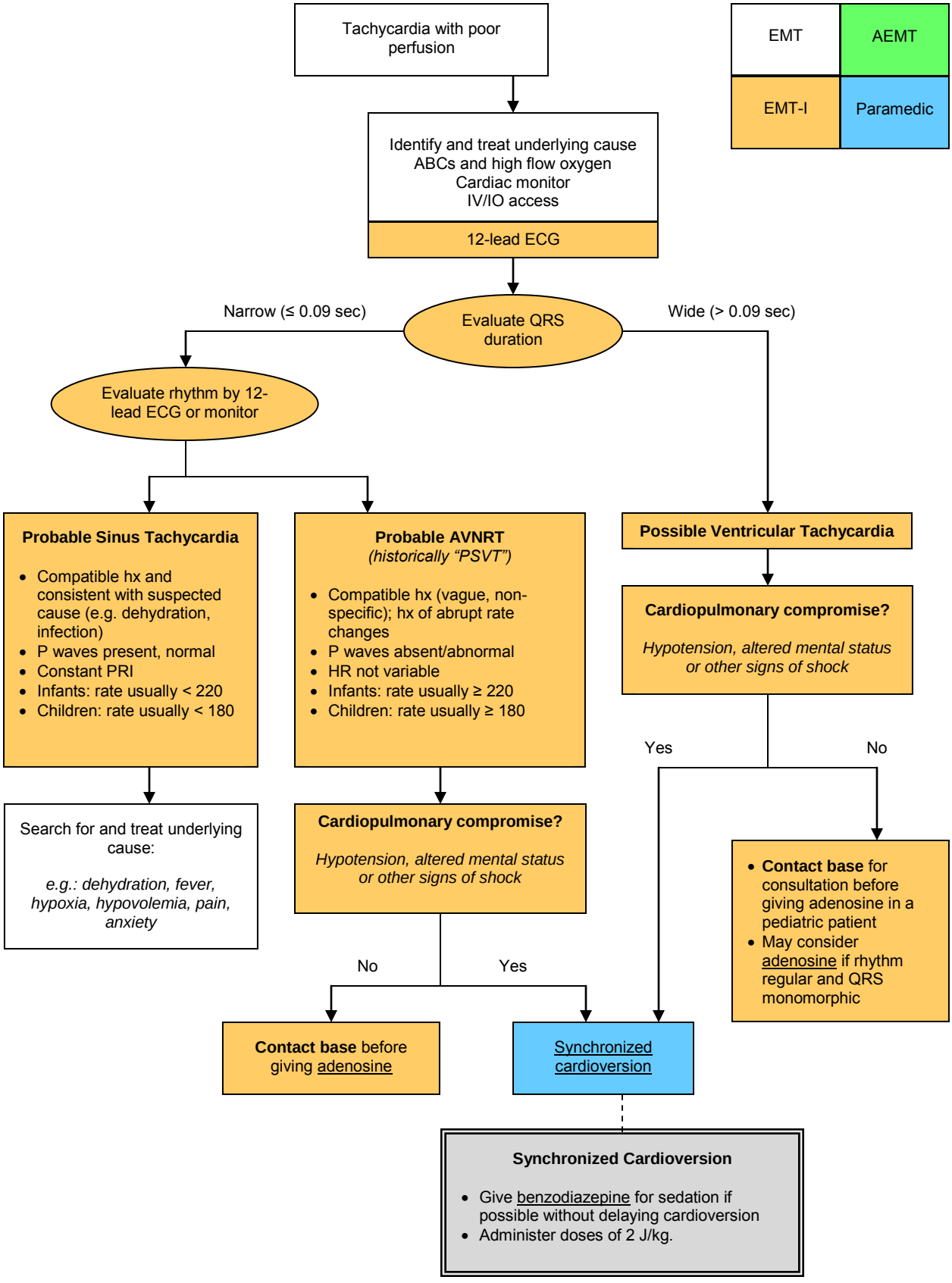
6020 PEDIATRIC (AGE < 12 YEARS) TACHYCARDIA WITH POOR PERFUSION



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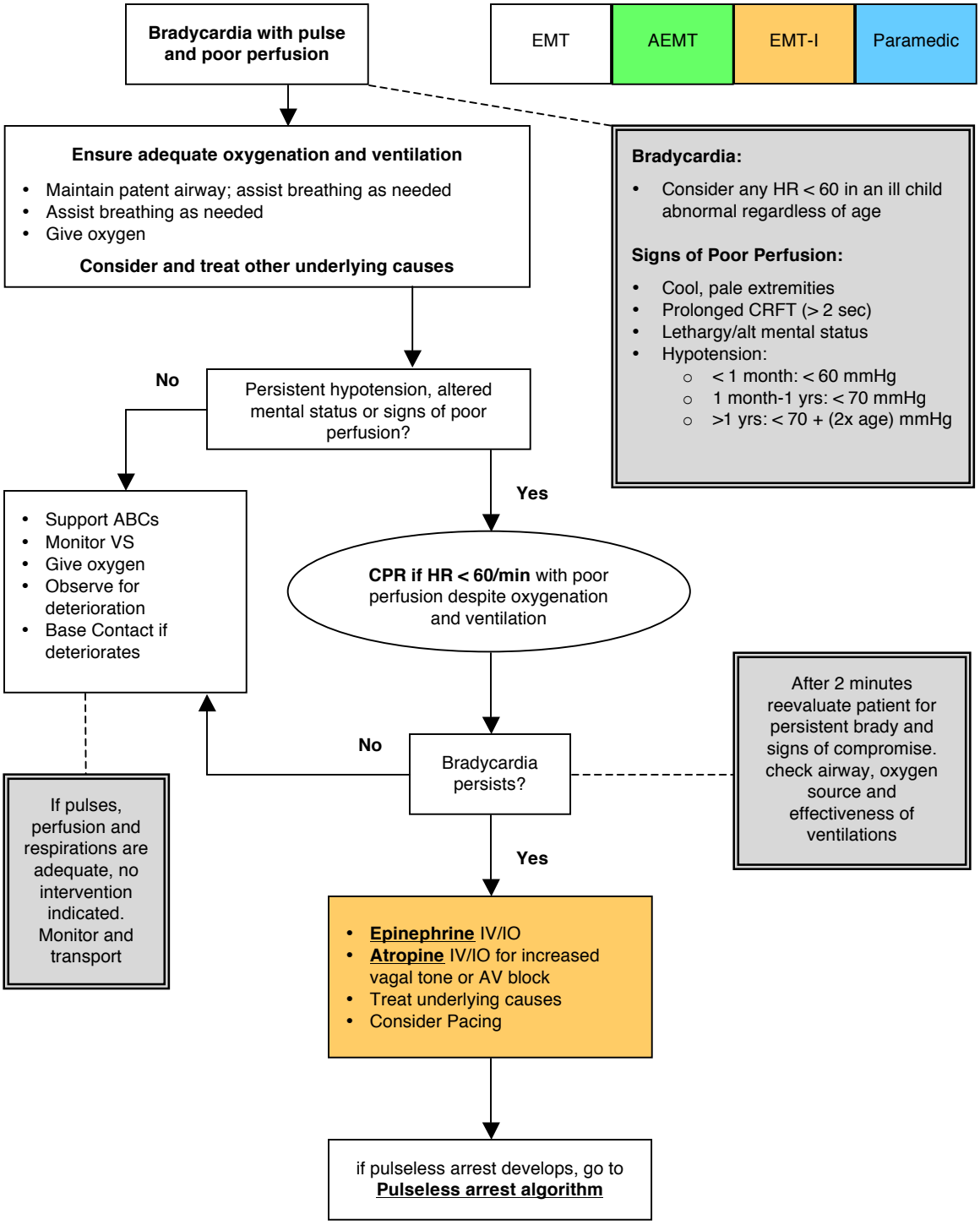
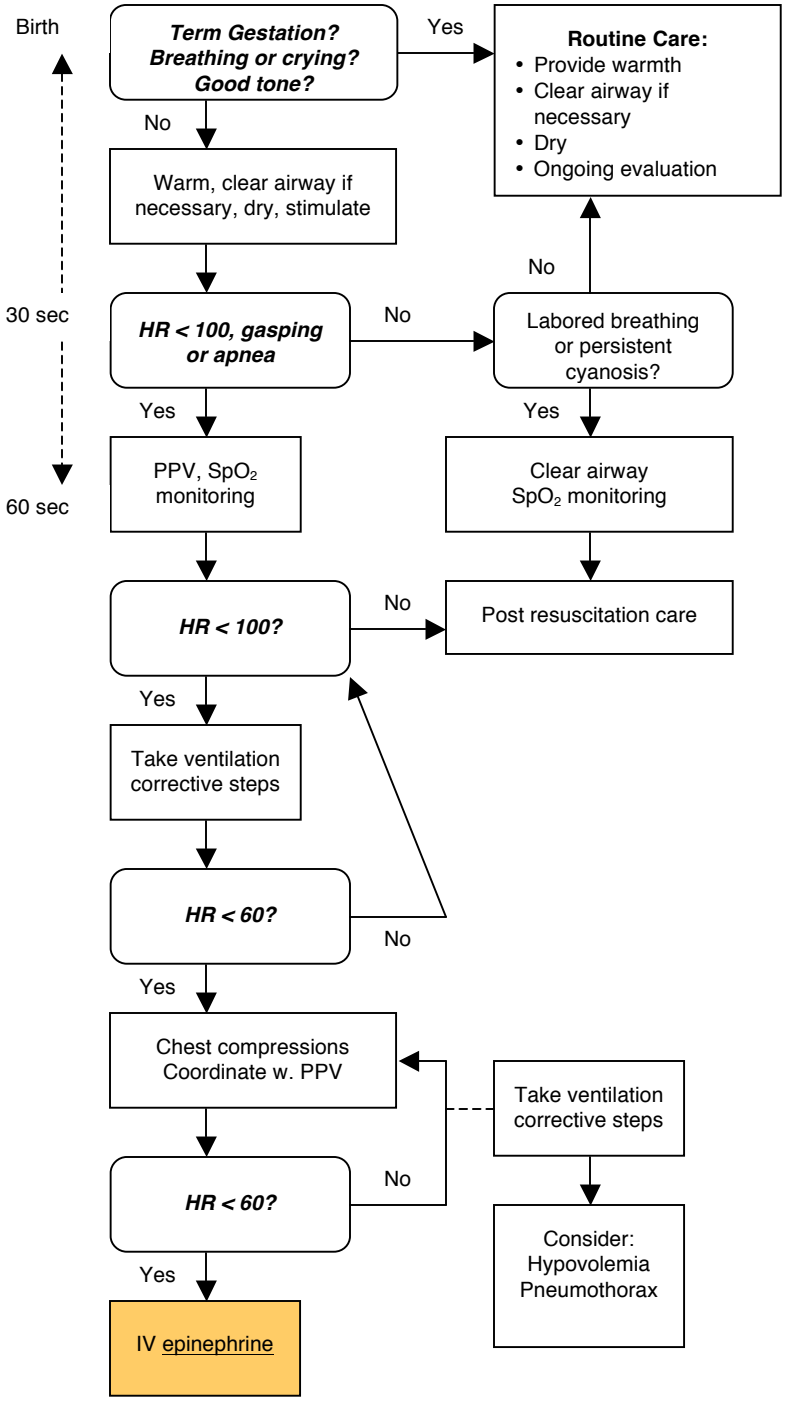
6021 PEDIATRIC (AGE < 12 YEARS) BRADYCARDIA WITH POOR PERFUSION



6025 NEONATAL RESUSCITATION



EMT	AEMT
EMT-I	Paramedic

General Considerations
(From 2010 AHA Guidelines)

- Newborn infants who do not require resuscitation can be identified generally based on 3 questions:
  - Term gestation?
  - Crying or breathing?
  - Good muscle tone?
- If answer to all 3 questions is "yes" then baby does not require resuscitation and should be dried, placed skin-to-skin on mother and covered to keep warm
- If answer to any of 3 questions is "no" then infant should receive 1 or more of following 4 categories of intervention in sequence:
  - Initial steps in stabilization (warm, clear airway, dry, stimulate)
  - Ventilation
  - Chest compression
  - Administration of epinephrine and/or volume expansion
- It should take approx. 60 seconds to complete initial steps
- The decision to progress beyond initial steps is based on an assessment of respirations (apnea, gasping, labored or unlabored breathing) and heart rate (>/< 100 bpm)

Assisting Ventilations:

- Assist ventilations at rate of 40-60 breaths per minute to maintain HR > 100

Chest compressions:

- Indicated for HR < 60 despite adequate ventilation w. supplemental O_2 for 30 seconds
- 2 thumb – encircling hands technique preferred
- Allow chest recoil
- Coordinate with ventilations so not delivered simultaneously
- 3:1 ratio of compressions to ventilations w. exhalation occurring during 1st compression after each ventilation

6026 NEONATAL CONSIDERATIONS

General Considerations:

A. A neonate refers to a newly born child under the age of 30 days. While most neonates transition to post-natal life without difficulty, 10% will require medical assistance. Respiratory insufficiency is the most common complication observed in the newly born.

B. Neonates born precipitously may exhibit signs of stress such as apnea, grunting respirations, lethargy or poor tone
    1. Provide warmth, bulb suction mouth and then nose, and dry the infant
    2. If breathing spontaneously, HR >100 and infant is vigorous, continue to monitor
    3. If apneic, cyanotic, lethargic, or HR <100, provide 100% oxygen via BVM ventilations at a rate of 40-60 bpm
    4. If HR < 60, begin CPR at 3:1 compression:ventilation ratio.

C. For neonates who do not respond to initial interventions as above:
    1. Obtain blood glucose level and if < 60, administer dextrose IV/IO (D10 4 mL/kg)
    2. Administer epinephrine IV for persistent HR < 60
    3. Consider hypovolemia and administer 10-20ml/kg NS over 5-10 minutes

D. Neonates with congenital heart disease may not be detected prior to hospital discharge after delivery. Consider a cardiac cause of shock in the neonate who remains hypoxic or has persistent cyanosis despite 100% oxygen. These neonates may decompensate precipitously and fluid administration should be used judiciously (10ml/kg NS)

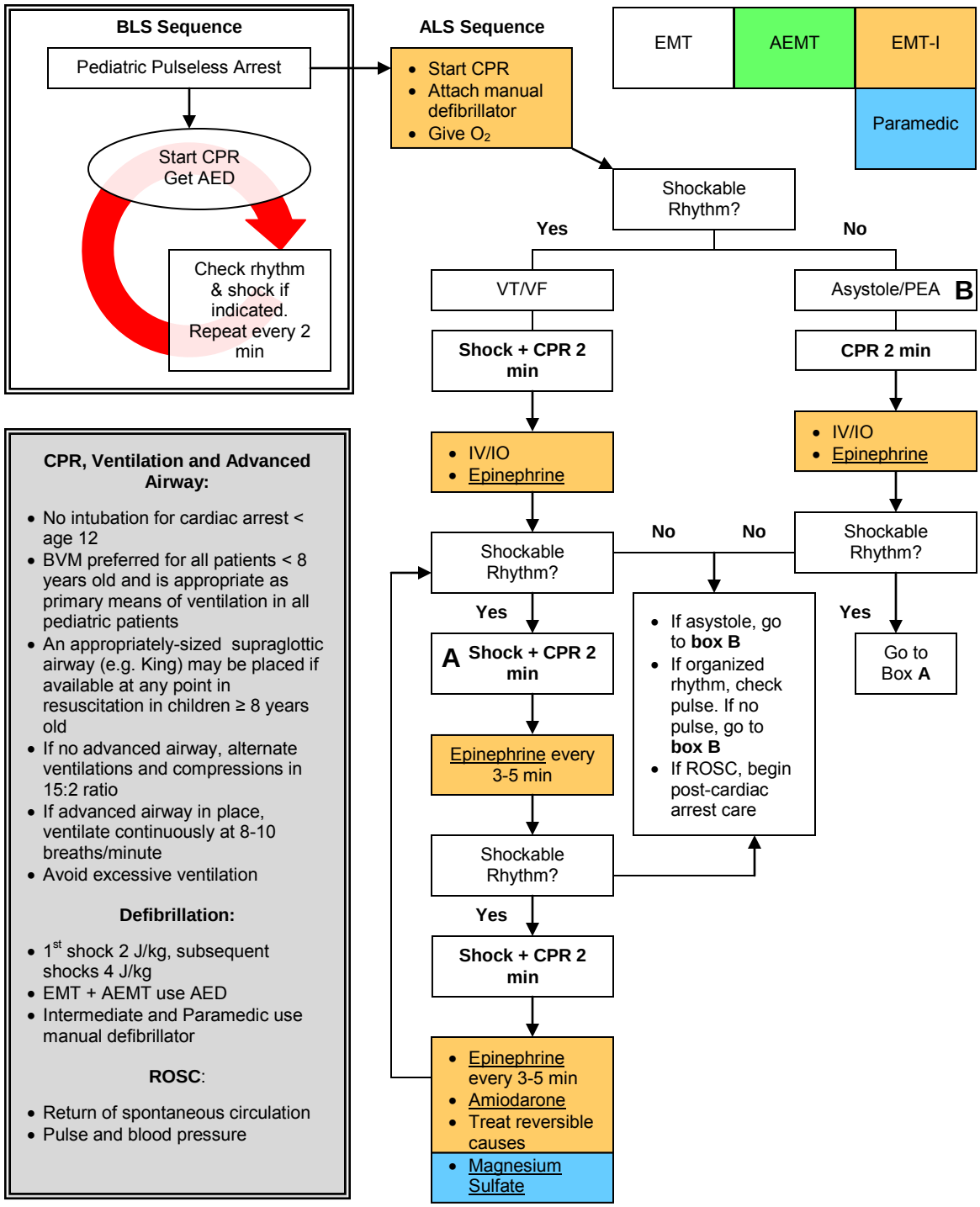
E. Newborns are at high risk for hypothermia. Provide early warming measures, keep covered as much as possible (especially the head) and increase the temperature in the ambulance

F. Acrocyanosis (cyanosis of only the hands and feet) is normal in newborns and does not require intervention

G. Prolonged apnea without bradycardia or cyanosis may indicate respiratory depression caused by narcotics. However, naloxone should be avoided in infants of a known or suspected narcotic-addicted mother as this may induce a withdrawal reaction. Respiratory support alone is recommended

H. Obtain pregnancy history, gestational age of the neonate, pregnancy complications, and any illicit drug use during pregnancy.

6030 PEDIATRIC (AGE < 12 YEARS) PULSELESS ARREST ALS ALGORITHM



Regarding where to work arrest and presence of family members

- CPR in a moving ambulance or pram is ineffective
- In general, work cardiac arrest on scene either to return of spontaneous circulation (ROSC), or to field pronouncement, unless scene unsafe
- Family presence during resuscitation is preferred by most families, is rarely disruptive, and may help with grieving process for family members
- Family presence during resuscitation is recommended, unless disruptive to resuscitation efforts
- Contact base for termination of resuscitation

Approved by Denver Metro EMS Medical Directors January 1, 2013. Next review July 2013

6040 CARE OF THE CHILD WITH SPECIAL NEEDS

General Guideline:

A. Children with special health care needs include those with chronic physical, developmental, behavioral or emotional health issues. These children often have complex medical needs and may be technology-dependent. Parents or caregivers for such children can be a wealth of knowledge about their child's care and may carry a reference care sheet. Contact Base Station for any concerns.
B. Under Chapter 2 Rule: specialized prescription medications to address an acute crisis may be given by all levels with a direct VO, given the route of administration is within the scope of the provider. This applies to giving hydrocortisone for adrenal crisis, for instance if a patient or family member has this medication available on scene. Contact base for direct verbal order

Feeding Tubes:

A. Feedings tubes are used for administration of medications and to provide feeds to children with an impaired ability to take oral feeds. Always ask caretaker the type of feeding tube (does the tube end in the stomach or jejunum?) and when it was placed
B. Tubes may be placed through the nose, mouth or abdomen and end in the stomach or jejunum (upper intestine)
C. Consider venting and/or gently aspirating the feeding tube in a child with respiratory or abdominal distress to allow removal of gastric contents and decompression
D. Feeding tubes that have been placed less than 6 weeks ago are not well established and may close within 1 hour of tube removal. If transport time is prolonged, place an 8 Fr suction catheter tube 2 inches into the stoma to maintain patency. Do NOT use the tube.

Tracheostomy:

A. A tracheostomy is a surgical opening between the trachea and the anterior surface of the neck. Its purpose is to bypass the upper airway for chronically ventilated patients, upper airway obstructions, or to facilitate secretion removal in those with ineffective gag or swallow reflexes.
B. Use bag-valve attached to the tracheostomy to assist ventilations if needed. May also attempt BVM with gloved finger over the tracheostomy
C. Inability to ventilate and/or signs of respiratory distress (nasal flaring, retractions, hypoxia, etc) may indicate tracheostomy obstruction. Suction tracheostomy, passing the suction catheter no further than 6 cm. Limit suctioning time to minimum amount of time necessary to accomplish effective suctioning. Oxygenate between passes with the suction catheter.
D. 0.5ml of saline may be instilled into the tracheostomy to assist suctioning of thick secretions
E. If unable to ventilate through the tracheostomy tube and patient is apneic, bradycardic, or in pulseless arrest, remove tracheostomy tube and pass an appropriately sized endotracheal tube through the stoma approximately 1-2 inches, secure and ventilate. Appropriate depth must be based upon breath sounds, as right mainstem intubation is likely.
F. Remember that caregivers are often the best people to change and suction a tracheostomy tube. Use them as your resource when possible.

Central Venous Catheters (CVCs):

A. Because of their size and location, a much greater risk of serious bacterial infections exist with CVCs compared to peripheral intravenous lines. Special care must be used when accessing such lines

B. Prior to accessing a CVC, hands should be washed and gloves worn. Vigorously scrub the CVC hub with an alcohol swab. While alcohol possesses some antimicrobial properties, the friction produced by scrubbing is the most effective
C. A port is an implanted venous central venous catheter (below the surface of the skin). These devices require a non-coring (e.g. Huber) needle for accessing and should not be accessed in the field

6050 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS ALGORITHM (AGE < 12 YEARS)

EMT	AEMT	EMT-I	Paramedic

All patients:
- Give oxygen to all patients w. respiratory distress via least distressing means, either blow-by or NRB facemask
- Minimize patient discomfort and avoid agitation. Transport in position of comfort

Inadequate ventilations?
- Place in neutral position with towel roll beneath shoulders if age <8 years
- Place oral airway if unconscious
- Assist with BVM per Assisted Ventilations Protocol

Inadequate ventilations and unable to ventilate with BVM?
- **Consider ETI in a child ONLY if unable to adequately ventilate with BVM and oral airway**
- Reposition airway, check technique and equipment. If still unable to oxygenate and ventilate, proceed with Oral Endotracheal Intubation Protocol

Treat specific conditions

General Assessment:
- Attempt to determine cause of respiratory distress based on clinical scenario, age, past history and exam
- Assess Airway, Breathing, perfusion and mental status in all patients

Airway Assessment
- If obstructed, see Obstructed Airway Protocol
- Observe for stridor, hoarseness, drooling
- Consider foreign body if sudden onset stridor in young child
- Early suctioning of secretions may dramatically improve respiratory distress in bronchiolitis

Breathing Assessment
- Note rate and effort ("work of breathing")
- Normal RR neonate >40, infants >20, child > 12bpm
- Listen for upper airway abnormal sounds which may mimic wheezing: stridor, hoarseness, barky cough (suggests croup)
- Note grunting, nasal flaring, head bobbing, chest wall movement, retractions, accessory muscle use
- Auscultate breath sounds for wheezing, crackles, decreased air movement (suggests bronchospasm)

Croup

6 months - 5 years w. stridor, barky cough, URI sx. Sx often rapid, nocturnal onset
- Transport in position of comfort w. parent
- Blow-by O_2

For severe symptoms

Stridor at rest, severe retractions, cyanosis, altered LOC
- Give nebulized racemic epinephrine or 1:1000 L-epinephrine

Inadequate response to treatment?

Contact base for consult

Bronchiolitis

Age < 2 yrs w. cough, fever, resp. distress, +/- wheezing
- Transport in position of comfort w. parent
- Blow-by O_2

For severe symptoms

Hypoxia despite O_2, severe retractions, cyanosis, altered LOC
- Nasal suctioning
- Give nebulized racemic epinephrine or 1:1000 L-epinephrine

Inadequate response to treatment?

Contact base for consult

Asthma

EMT may administer either MDI or nebulized albuterol with **base contact** for verbal order
- Give albuterol by nebulizer
- If age > 2 yrs, add ipratropium
- Repeat as needed, may use continuous nebulization for severe respiratory distress

For severe symptoms and inadequate response to all above treatment

Hypoxia despite O_2, severe retractions, cyanosis, altered LOC
- Give epinephrine IM
- Give methylprednisolone IV
- Contact base for consult

Consider pulmonary and non-pulmonary causes of respiratory distress in all cases:
Common: croup, bronchiolitis, asthma**. Less common**: foreign body aspiration, allergic reaction, pneumonia. **Rare**: epiglottitis, bacterial tracheitis. **Also**: Congenital heart disease (CHF), sepsis, other metabolic acidosis (e.g.: DKA, inborn error of metabolism)

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6060 PEDIATRIC APPARENT LIFE-THREATENING EVENT (ALTE)

EMT	AEMT
EMT-I	Paramedic

DEFINITION:
An infant < 1 year of age with episode frightening to the observer characterized by apnea, choking/gagging, color change or change in muscle tone

↓

Support ABCs as necessary

↓

Obtain detailed history of event and medical history

↓

Complete head-to-toe assessment

↓

- Any child with an ALTE should be transported to ED for evaluation
- Monitor vital signs en route

Clinical history to obtain from observer of event:

- Document **observer's** impression of the infant's color, respirations and muscle tone
- For example, was the child apneic, or cyanotic or limp during event?
- Was there seizure-like activity noted?
- Was any resuscitation attempted or required, or did event resolve spontaneously?
- How long did the event last?

Past Medical History:

- Recent trauma, infection (e.g. fever, cough)
- History of GERD
- History of Congenital Heart Disease
- History of Seizures
- Medication history

Examination/Assessment

- Head to toe exam for trauma, bruising, or skin lesions
- Check anterior fontanelle: is it bulging, flat or sunken?
- Pupillary exam
- Respiratory exam for rate, pattern, work of breathing and lung sounds
- Cardiovascular exam for murmurs and symmetry of brachial and femoral pulses
- Neuro exam for level of consciousness, responsiveness and any focal weakness

6070 PEDIATRIC TRAUMA CONSIDERATIONS (AGE < 12 YEARS)

EMT	AEMT	EMT-I	Paramedic

Spinal Immobilization

A. Context/Special Considerations:
B. 60-80% of spine injuries in children occur at the cervical level
C. Children < 8 age year are more likely to sustain high C1-C3 injuries
D. Less force is required to injure the cervical spine in children than adults
E. Children with Down Syndrome are at risk for cervical spine injury
F. Avoid strapping abdomen- children are abdominal breathers
G. Use age/size appropriate immobilization devices
H. Proper immobilization of pediatric patients should **prevent**:
    1. Flexion/extension, rotation, lateral bending or axial loading of the neck (car seats do not prevent axial loading and are not considered proper immobilization technique)
    2. Non-neutral alignment or alteration in normal curves of the spine for age (consider the large occiput)
    3. Twisting, sliding or bending of the body during transport or care

Spinal Immobilization criteria:

A. Be conservative. Children are difficult to assess and “clinical clearance” criteria are not well established, as in adults
B. Immobilize the following patients as well as any child you suspect clinically may have a spine injury:
    1. Altered Mental Status (GCS < 15, AVPU < A, or intoxication)
    2. Focal neurologic findings (paresthesias, loss of sensation, weakness)
    3. Non-ambulatory patient
    4. Any complaint of neck pain
    5. Torticollis (limited range of motion, difficulty moving neck in history or physical)
    6. Substantial torso Injury (thorax, abdomen, pelvis)
    7. High Risk MVC (head on collision, rollover, ejected from the vehicle, death in the same crash, or speed > 55 m/h)
    8. Diving accident

ADENOSINE (ADENOCARD)

Description

Adenosine transiently blocks conduction through the AV node thereby terminating reentrant tachycardias involving the AV node. It is the drug of choice for AV nodal reentrant tachycardia (AVNRT, often referred to as “PSVT”). It will not terminate dysrhythmias that do not involve the AV node as a reentrant limb (e.g. atrial fibrillation).

Onset & Duration

- Onset: almost immediate
- Duration: 10 sec

Indications

- Narrow-complex supraventricular tachyarrhythmia
- Stable, undifferentiated, **regular**, monomorphic wide-complex tachycardia
- Pediatric administration requires call in for direct verbal order

Contraindications

- Any irregular tachycardia. Specifically never administer to an irregular wide-complex tachycardia, which may be lethal
- Heart transplant

Adverse Reactions

- Chest pain
- Shortness of breath
- Diaphoresis
- Palpitations
- Lightheadedness

Drug Interactions

- Methylxanthines (e.g. caffeine) antagonize adenosine, a higher dose may be required
- Dipyridamole (persantine) potentiates the effect of adenosine; reduction of adenosine dose may be required
- Carbamazepine may potentiate the AV-nodal blocking effect of adenosine

Dosage and Administration

Adult:

12 mg IV bolus, rapidly, followed by a normal saline flush.
Additional dose of 12 mg IV bolus, rapidly, followed by a normal saline flush.
Contact medical control for further considerations

Pediatric (Requires **Call in** and direct **verbal order):**

0.2 mg/kg IV bolus (max 6 mg), rapidly followed by normal saline flush.
Additional dose of 0.2 mg/kg (max 12 mg) rapid IV bolus, followed by normal saline flush
Contact medical control for further considerations

Protocol

- Adult Tachyarrhythmia with Poor Perfusion
- Pediatric Tachyarrhythmia with Poor Perfusion

Special Considerations

- Reliably causes short lived but very unpleasant chest discomfort. Always warn your patient of this before giving medication and explain that it will be a very brief sensation
- May produce bronchospasm in patients with asthma
- Transient asystole and AV blocks are common at the time of cardioversion
- Adenosine is not effective in atrial flutter or fibrillation
- Adenosine is safe in patients with a history of Wolff-Parkinson-White syndrome if the rhythm is regular and QRS complex is narrow
- A 12-lead EKG should be performed and documented, when available
- Adenosine requires continuous EKG monitoring throughout administration

ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

Description

- Albuterol is a selective ß-2 adrenergic receptor agonist. It is a bronchodilator and positive chronotrope.
- Because of its ß agonist properties, it causes potassium to move across cell membranes inside cells. This lowers serum potassium concentration and makes albuterol an effective temporizing treatment for unstable patients with hyperkalemia.

Onset & Duration

- Onset: 5-15 minute after inhalation
- Duration: 3-4 hours after inhalation

Indications

- Bronchospasm
- Known or suspected hyperkalemia with ECG changes (i.e.: peaked T waves, QRS widening)

Contraindications

- Severe tachycardia is a relative contraindication

Adverse Reactions

- Tachycardia
- Palpitations
- Dysrhythmias

Drug Interactions

- Sympathomimetics may exacerbate adverse cardiovascular effects.
- ß-blockers may antagonize albuterol.

How Supplied

MDI: 90 mcg/metered spray (17-g canister with 200 inhalations)
Pre-diluted nebulized solution: 2.5 mg in 3 ml NS (0.083%)

Dosage and Administration

Adult:

Single Neb dose
Albuterol sulfate solution 0.083% (one unit dose bottle of 3.0 ml), by nebulizer, at a flow rate (6-8 lpm) that will deliver the solution over 5 to 15 minutes. May be repeated twice (total of 3 doses).

Continuous Neb dose
In more severe cases, place 3 premixed containers of albuterol (2.5 mg/3ml) for a total dose of 7.5 mg in 9 ml, into an oxygen-powered nebulizer and run a continuous neb at 6-8 lpm.

Pediatric:

Single Neb dose
Albuterol sulfate 0.083% (one unit dose bottle of 3.0 ml), by nebulizer, at a flow rate (6-8 lpm) that

will deliver the solution over 5-15 minutes. May be repeated twice during transport (total of 3 doses).

Protocol

- Asthma
- COPD
- Pediatric Respiratory Distress
- Allergy and Anaphylaxis

Special Considerations

- Consider inline nebs for patients requiring endotracheal intubation or CPAP.
- May precipitate angina pectoris and dysrhythmias
- Should be used with caution in patients with suspected or known coronary disease, diabetes mellitus, hyperthyroidism, prostatic hypertrophy, or seizure disorder
- Wheezing associated with anaphylaxis should first be treated with epinephrine IM.

AMIODARONE (CORDARONE)

Description

Amiodarone has multiple effects showing Class I, II, III and IV actions with a quick onset. The dominant effect is prolongation of the action potential duration and the refractory period.

Indications

- Cardiac arrest in patients with shock refractory VF/VT
- Wide complex tachycardia not requiring immediate cardioversion due to hemodynamic instability
- Following successful cardioversion of VF/VT

Precautions

- Wide complex irregular tachycardia
- Sympathomimetic toxidromes, i.e. cocaine or amphetamine overdose
- NOT to be used to treat ventricular escape beats or accelerated idioventricular rhythms

Contraindications

- 2nd or 3rd degree AV block
- Cardiogenic shock

Adverse Reactions

- Severe hypotension
- Bradycardia

Dosage and Administration

Adult:

Pulseless Arrest (Refractory VT/VF)
300 mg IV bolus.
Repeat once 150 mg IV bolus in 3-5 minutes.
Post arrest following successful conversion of VT/VF
150 mg IV bolus infusion over 10 minutes
Symptomatic wide complex tachycardia with a pulse (CONTACT BASE)
150 mg IV bolus infusion over 10 minutes.

Pediatric:

Pulseless Arrest (Refractory VT/VF)
5mg/kg IV over 3-5 minutes. (**CONTACT BASE** for additional doses)

Protocol

- Adult Universal Pulseless Arrest Algorithm
- Pediatric Universal Pulseless Arrest Algorithm
- Adult Tachycardia with Poor Perfusion

Special Considerations

- A 12-lead EKG should be performed and documented, when available.

ANTIEMETICS: ONDANSETRON (ZOFRAN), PROMETHAZINE (PHENERGAN), METACLOPRAMIDE (REGLAN)

Description

- Ondansetron is a selective serotonin 5-HT3 receptor antagonist antiemetic. Ondansetron is the preferred antiemetic, if available.
- Promethazine is a non-selective central and peripheral H-1 type histamine antagonist with anticholinergic properties resulting in antiemetic and sedative effects.
- Metaclopramide is a dopamine antagonist that works by blocking the CNS vomiting chemoreceptor trigger zone (CRT).

Indications

- Nausea and vomiting

Contraindications

- Ondansetron: none.
- Promethazine: age < 2 years, patients with respiratory or CNS depression or allergy to sulfites.
- Metaclopramide: age < 8 years or suspected bowel obstruction.

Adverse Effects:

- Ondansetron: very low rate of adverse effects, very well tolerated
- Promethazine: hypotension, CNS depression, altered mental status, pain on injection, including tissue necrosis with extravasation, extrapyramidal symptoms, urinary retention
- Metoclopramide: restlessness, agitation, extrapyramidal symptoms, sedation. Increased GI motility – do not use if suspected bowel obstruction.

Dosage and Administration
Ondansetron:

Adult:
4 mg IV/IM/PO/ODT. May repeat x 1 dose as needed. EMT/EMT-IV may give ODT only and require direct verbal order.

Pediatric < 4 years old:
2 mg IV/PO/ODT

Pediatric ≥ 4 years old:
4 mg IV/PO/ODT

Promethazine:
Adult:
6.25 mg IV/IM. May repeat x 1 dose as needed.

Pediatric > 2 years old:
0.25-0.5 mg/kg IV/IM to a maximum of 6.25 mg.

Metaclopramide:
Adult:
10 mg IV/IM.

Pediatric 8-12 years old:
5 mg IV/IM.

Protocol

- Abdominal Pain/Vomiting
- Altitude Illness

Promethazine and Metaclopramide Side effects/Special Notes:

- Drowsiness, dizziness, dry mouth and blurred or double vision are common.
- If hypotension occurs, administer fluid bolus.
- Dystonia and akathisia may occur, and should be treated with diphenhydramine.
- Elderly may become agitated or disoriented. Consider reducing the dose in elderly patients.

ASPIRIN (ASA)

Description

Aspirin inhibits platelet aggregation and blood clotting and is indicated for treatment of acute coronary syndrome in which platelet aggregation is a major component of the pathophysiology. It is also an analgesic and antipyretic

Indications

- Suspected acute coronary syndrome.

Contraindications

- **Active** gastrointestinal bleeding
- Aspirin allergy

How Supplied

Chewable tablets 81mg

Dosage and Administration

- 324mg PO

Protocol

- Chest Pain

Special Considerations

- Patients with suspected acute coronary syndrome taking warfarin (Coumadin) or clopidogrel (Plavix) may still be given aspirin

ATROPINE SULFATE

Description

Atropine is an endogenous antimuscarinic, anticholinergic substance. It is the prototypical anticholinergic medication with the following effects:

- Increased heart rate and AV node conduction
- Decreased GI motility
- Urinary retention
- Pupillary dilation (mydriasis)
- Decreased sweat, tear and saliva production (dry skin, dry eyes, dry mouth)

Indications

- Symptomatic bradycardia
- 2nd and 3rd degree heart block
- Organophosphate poisoning

Precautions

- Should not be used without medical control direction for stable bradycardias
- Closed angle glaucoma

Adverse Reactions

- Anticholinergic toxidome in overdose, think “blind as a bat, mad as a hatter, dry as a bone, red as a beet”

Dosage and Administration

Hemodynamically Unstable Bradycardia

Adult:

0.5 mg IV/IO bolus.

Repeat if needed at 3-5 minute intervals to a maximum dose of 3 mg. (Stop at ventricular rate which provides adequate mentation and blood pressure)

Pediatric:

0.02 mg/kg IV/IO bolus. Minimum dose is 0.1 mg, maximum single dose 0.5 mg

Stable Bradycardia and Poisoning/Overdose

CONTACT BASE

Protocol

- Bradycardia
- Neonatal Resuscitation
- Poisoning/Overdose

Special Considerations

- Atropine causes pupil dilation, even in cardiac arrest settings

BENZODIAZEPINES (DIAZEPAM, LORAZEPAM, MIDAZOLAM)

Description

- Benzodiazepines are sedative-hypnotics that act by increasing GABA activity in the brain. GABA is the major inhibitory neurotransmitter, so increased GABA activity *inhibits* cellular excitation. Benzodiazepine effects include anticonvulsant, anxiolytic, sedative, amnestic and muscle relaxant properties. Each individual benzodiazepine has unique pharmacokinetics related to its relative lipid or water solubility.
- Selection of specific agent as preferred benzodiazepine is at individual agency Medical Director discretion.

Onset & Duration

- Any agent given IV will have the fastest onset of action, typical time of onset 2-3 minutes
- Intranasal administration has slower onset and is less predictable compared to IV administration, however it may still be preferred if an IV cannot be safely or rapidly obtained. Intranasal route has faster onset compared to intramuscular route.
    - Diazepam is not absorbed well IN.
- IM administration has the slowest time of onset.

Indications

- Status epilepticus
- Sedation of the severely agitated/combative patient
- Sedation for cardioversion or transcutaneous pacing (TCP)
- Adjunctive agent for treatment of severe pain (e.g. back spasms) in adults that is uncontrolled by maximum opioid dose – **WITH CALL IN ONLY**

Contraindications

- Hypotension
- Respiratory depression

Adverse Reactions

- Respiratory depression, including apnea
- Hypotension
- Consider ½ dosing in the elderly for all benzodiazepines

Dosage and Administration

MIDAZOLAM:

Seizure or sedation for cardioversion or transcutaneous pacing:

Adult:

IV/IO route: 2 mg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

IN/IM route (intranasal preferred): 5 mg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

Pediatric:

IV/IO route 0.1 mg/kg
- Maximum single dose is 2 mg IV. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

IN/IM route (intranasal preferred): 0.2 mg/kg.
- Maximum single dose is 5 mg IN or IM. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

Sedation of severely agitated or combative patient

Adult:
IV route: 2 mg
IN/IM route: 5 mg
- Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** present, in which case up to a total of 3 doses may be given as standing order in order to rapidly sedate patient.

Pediatric:
- **CONTACT BASE** before any consideration of sedation of severely agitated/combative child

Adjunctive agent for treatment of severe pain / muscle spasms
BASE CONTACT REQUIRED
IV/IO route: 1-2 mg

DIAZEPAM:

Seizure or sedation for cardioversion or transcutaneous pacing:

Adult:
IV/IO route: 5 mg
- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

Pediatric:
IV/IO route 0.3 mg/kg
- Maximum single dose is 5 mg IV. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

Sedation of severely agitated or combative patient

Adult:
IV route: 5 mg
- Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** present, in which case up to a total of 3 doses may be given as standing order in order to rapidly sedate patient

Pediatric:
- **CONTACT BASE** before any consideration of sedation of severely agitated/combative child

Adjunctive agent for treatment of severe pain / muscle spasms
BASE CONTACT REQUIRED
IV/IO route: 1-5 mg

LORAZEPAM:
Seizure or sedation for cardioversion or transcutaneous pacing:

Adult:

IV/IO route: 1 mg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

IN/IM route (intranasal preferred): 2 mg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

Pediatric:

IV route: 0.05 mg/kg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

IN/IM route (intranasal preferred): 0.1 mg/kg

- Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

Sedation of severely agitated or combative patient

Adult:

IV route: 2 mg

IN/IM route 2 mg

- Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** present, in which case up to a total of 3 doses may be given as standing order in order to rapidly sedate patient

Pediatric:

- **CONTACT BASE** before any consideration of sedation of severely agitated/combative child

Adjunctive agent for treatment of severe pain / muscle spasms

BASE CONTACT REQUIRED

IV/IO route: 1-2 mg

Protocol

- Synchronized Cardioversion
- Transcutaneous Pacing
- Adult Seizure
- Pediatric Seizure
- Pediatric tachycardia with poor perfusion
- Agitated/Combative Patient
- Poisoning/Overdose

Special Considerations

- All patients receiving benzodiazepines must have cardiac, pulse oximetry monitoring during transport. Continuous waveform capnography recommended.
- Sedative effects of benzodiazepines are increased in combination with opioids, alcohol, or other CNS depressants.
- Coadministration of opioids and benzodiazepines is discouraged and may only be done with direct physician verbal order.
- In elderly patients > 65 years old or small adults < 50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.

CALCIUM GLUCONATE

Description

- Cardioprotective agent in hyperkalemia.
- 10% calcium gluconate solution contains 1 g calcium gluconate per 10 mL, which is only 90mg of elemental calcium.
- Doses below refer to dose of calcium gluconate solution, not elemental calcium.

Indications

- Adult pulseless arrest associated with any of the following clinical conditions:
  - Known hyperkalemia
  - Renal failure with or without hemodialysis history
  - Calcium channel blocker overdose
- **Not indicated for routine treatment of pulseless arrest**
- Adult or pediatric calcium channel blocker overdose with hypotension, bradycardia

Contraindications

- Known hypercalcemia
- Suspected digoxin toxicity (i.e. digoxin overdose)

Side Effects/Notes

- Must give in separate line from IV sodium bicarb to prevent precipitation/formation of calcium carbonate
- Extravasation may cause tissue necrosis
- In setting of digoxin toxicity, may worsen cardiovascular function

Dosage and Administration

Adult:

- **Pulseless arrest assumed due to hyperkalemia:**
  - 1 g slow IV push
- **Calcium channel blocker overdose:**
  - **Contact base** for order. 1 g slow IV/IO push over 2-3 minutes. Dose may be repeated every 10 minutes for total of 3 doses

Pediatric:

- **Calcium channel blocker overdose:**
  - **Contact Base**. 60 mg/kg (0.6 mL/kg), not to exceed 1 g slow IV/IO push, may repeat every 10 minutes for total of 3 doses

Protocol

- Adult Universal Pulseless Arrest ALS Algorithm
- Poisoning/Overdose

DEXTROSE 50%

Description

Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar level will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose from the blood stream, and glucagon, which mobilizes stored glucose into the blood stream.

Indications

- Hypoglycemia
- The unconscious or altered mental status patient with an unknown etiology.

Precautions

- None

Dosage and Administration

Adult:

25 gm (50 ml of a 50% solution) IV/IO bolus

Pediatric:

1-8 years: 2-4 ml/kg of a 25% solution

<1 year: 2-4 ml/kg of a 10% solution

Protocol

- Universal Altered Mental Status
- Seizures
- Poisoning/Overdose
- Psych/Behavioral
- Neonatal Resuscitation

Special Considerations

- The risk to the patient with ongoing hypoglycemia is enormous. With profound hypoglycemia and no IV access consider IO insertion.
- Draw blood sample before administration if possible.
- Use glucometer before administration, if possible.
- Extravasation may cause tissue necrosis; use a large vein and aspirate occasionally to ensure route patency.
- Dextrose can be irritable to the vein and the vein should be flushed after administration.
- Dextrose should be diluted 1:1 with normal saline (to create $D_{25}W$) for patient 1-8 years old.

DIPHENHYDRAMINE (BENADRYL)

Description

Antihistamine for treating histamine-mediated symptoms of allergic reaction. Also Anticholinergic and antiparkinsonian effects used for treating dystonic reactions caused by antiphsychotic and antiemetic medications (e.g.: haloperidol, droperidol, compazine, etc).

Indications

- Allergic reaction
- Dystonic medication reactions or akathesia (restlessness)

Precautions

- Asthma or COPD, thickens bronchial secretions
- Narrow-angle glaucoma

Side effects

- Drowsiness
- Dilated pupils
- Dry mouth and throat
- Flushing

Drug Interactions

- CNS depressants and alcohol may have additive effects.
- MAO inhibitors may prolong and intensify anticholinergic effects of antihistamines.

Dosage and Administration

Adults:
50 mg IV/IO/IM
Pediatics:
<8 years: 1-2 mg/kg slow IV/IO/IM (not to exceed 50 mg)

Protocol

Allergy/Anaphylaxis

DOPAMINE (INTROPIN)

Description

Endogenous catecholamine chemically related to epinephrine and norepinephrine. Increases blood pressure through combination of dopamine, alpha and beta receptor effects leading to increased heart rate, contractility and peripheral vasoconstriction.

Indications

- Hypotension refractory to adequate fluid resuscitation
- Symptomatic bradycardia with signs of poor perfusion

Contraindications

- Hypovolemia
- Hemorrhagic shock

Adverse Reactions

- Tachydysrhythmias
- Hypertension
- Increased myocardial oxygen demand

Dosage and Administration

CONTACT BASE for direct physician order
Mix: 400 mg in 250 ml NS or 800 mg in 500 ml NS to produce concentration of 1600 mcg/ml.

Adult IV/IO:

2~20 mcg/kg/min, Start at 5 mcg/kg/min, Titrate dose up 5 mcg/kg/min every 5 min to a max of 20 mcg/kg/min to achieve desired effect.

Pediatrics IV/IO:

2~20 mcg/kg/min, Start at 5 mcg/kg/min, Titrate dose up 5 mcg/kg/min every 5 min to a max of 20 mcg/kg/min to achieve desired effect.

Protocol

- Medical Hypotension/Shock Protocol
- Adult Bradycardia

Special Considerations

- May become ineffective if added to alkaline solution.
- Tissue extravasation at the IV site can cause skin sloughing due to vasoconstriction. Be sure to make Emergency Department personnel aware if there has been any extravasation of dopamine-containing solutions so that proper treatment can be instituted.

INTRAVENOUS DRIP RATES FOR DOPAMINE

Concentration: 1600 mcg/ml

Weight		Dose (mcg/kd/min)				
		5	10	15	20	
	50 kg	10	20	30	40	microdrips/min
	60 kg	10	25	35	45	
	70 kg	15	25	40	50	
	80 kg	15	30	45	60	
	90 kg	15	35	50	70	
	100 kg	20	35	55	75	
	110 kg	20	40	60	85	

DROPERIDOL (INAPSINE)

Description

- Droperidol is a butyrophenone derivative closely related to haloperidol. Droperidol produces a dopaminergic blockage, a mild alpha-adrenergic blockage, and causes peripheral vasodilation. Its major actions are sedation, tranquilization, and potent anti-emetic effect.

Onset & Duration

- Onset: 3-10 minutes after IM administration.
- Duration: 2-3 hours

Indications

- Primary use for management of agitated/combative patients.
- Second line medication for management of intractable vomiting requiring base contact.
- Combative head injured patients.

Contraindications

- Any patient with:
  - Suspected acute myocardial infarction/ACS
  - Systolic blood pressure under 100 mm/Hg, or the absence of a palpable radial pulse
  - Signs of respiratory depression

Side Effects

- Due to the vasodilation effect, droperidol can cause a transient hypotension that is usually self limiting and can be treated effectively with leg elevated position and IV fluids. Droperidol may cause tachycardia which usually does not require pharmacologic intervention.
- Some patient's may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following droperidol administration. Diphenhydramine 25 mg may be coadministered to alleviate these side effects.
- Extra-pyramidal reactions have been noted hours to days after treatment.
- Rare instances of neuroleptic malignant syndrome have been known to occur following treatment using droperidol.

Dosage and Administration

Agitation/Combative

Adult:
IV/IM route: 5.0 mg slow IV/IM administration, after 10 minutes if desired effect is not achieved contact base to consider a second dose. **Pediatric:**
Under the age of 12 Contact Base

Antiemetic: Contact base for orders

IV/IM route:
Adult: 1.25 mg slow push.
Pediatric: 0.05 mg/kg slow push.

Special Considerations

- Due to droperidol's potential effect on QT interval prolongation, all patients receiving droperidol should be placed on the cardiac monitor. Though it is understood that obtaining an ECG on the combative or agitated patient may be difficult, every effort should be made to do so.
- Avoid droperidol in frail or elderly patients due to increased risk of prolonged and over-sedation as well as increased risk of hypotension and prolonged QT. If it must be given, administer ½ typical dose.

Protocol

- Agitated/Combative Patient Protocol

EPINEPHRINE (ADRENALIN)

Description

Endogenous catecholamine alpha, beta-1, and beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation.

Indications

- Pulseless Arrest
- Anaphylaxis
- Asthma
- Bradycardia with poor perfusion

Adverse Reactions

- Tachycardia and tachydysrhythmia
- Hypertension
- Anxiety
- May precipitate angina pectoris

Drug Interactions

- Should not be added to sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.

Dosage and Administration

Adult:

Pulseless Arrest
1 mg (10 ml of a 1:10,000 solution), IV/IO bolus.
Repeat every 3-5 minutes.

Bradycardia/ hypotension refractory to other interventions (Contact Base):
Continuous infusion titrated to effect: 1 mg in 250 ml of Normal Saline IV/IO infused at 2 mcg/min until desired BP of > 90 mmHg systolic achieved.

Asthma:
0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

Systemic allergic reaction:
******<u>May be administered by EMT in place of Auto-injector with BASE CONTACT</u>******
0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

Severe systemic allergic reaction (Anaphylaxis) refractory to IM epi (Contact Base):
Continuous infusion titrated to effect: 1 mg in 250 ml of Normal Saline IV/IO infused at 2 mcg/min until desired BP of > 90 mmHg systolic achieved

ALTERNATIVE to racemic epinephrine: (for epiglottitis, miscellaneous causes of stridor)
5 mL of 1:1000 epinephrine via nebulizer x 1

Epinephrine Auto-Injector: requires **BASE CONTACT** for EMT administration

Systemic allergic reaction:
Adult: 0.3 mg IM with autoinjector (adult EpiPen)
Pediatric: 0.15 mg IM with autoinjector (EpiPen Jr.)

Pediatric:

Cardiac arrest:

0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution).
Subsequent doses repeated every 3-5min: 0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution)
Bradycardia (CONTACT BASE)
0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO
Asthma
0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM
Moderate to Severe Allergic Reactions
0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM
Severe systemic allergic reaction (Anaphylaxis) refractory to IM epi (Contact Base):
0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO
ALTERNATIVE to racemic epinephrine: (for bronchiolitis, croup, epiglottitis, miscellaneous causes of stridor)
5 mL of 1:1000 epinephrine via nebulizer x 1

Protocol

- Adult Universal Pulseless Arrest Algorithm
- Pediatric Pulseless Arrest ALS Algorithm
- Adult Bradycardia
- Neonatal Resuscitation
- Allergy and Anaphylaxis Protocol
- Bradycardia with Poor Perfusion
- Pediatric Respiratory Distress

Special Considerations

- May increase myocardial oxygen demand and angina pectoris. Use with caution in patients with known or suspected CAD

FUROSEMIDE (LASIX)

Description

Rapid acting, potent loop diuretic; inhibits reabsorption of sodium chloride. It is also a venous dilator that decreases preload and causes venous pooling and subsequent hypotension.

Indications

- Cardiogenic Pulmonary Edema and only with prolonged transport times (>30 min)

Contraindications

- Pregnancy
- Dehydration or shock

Side Effects

- Hypotension

Dosage and Administration

20-80 mg IV bolus. Patients not on Lasix should receive 20 mg. Patients taking lasix chronically should receive higher doses in the 40-80 mg range

Protocol

CHF/Pulmonary edema

GLUCAGON

Description

Increases blood sugar concentration by converting liver glycogen to glucose. Glucagon also causes relaxation of smooth muscle of the stomach, duodenum, small bowel, and colon.

Onset & Duration

- Onset: variable

Indications

- Altered level of consciousness where hypoglycemia is suspected and IV access is unavailable.
- Hypotension, bradycardia from beta-blocker or calcium channel overdose.

Side Effects

- Tachycardia
- Headache
- Nausea and vomiting

Dosage and Administration

Adult:

Hypoglycemia 1.0 mg, IM
Beta Blocker/Calcium Channel overdose 2.0 mg IV bolus (Contact Base)

Pediatric:

Hypoglycemia 0.1 mg/kg IM. Maximum dose 1.0 mg
Beta Blocker/Calcium Channel overdose 2.0 mg IV bolus (Contact Base)

Protocol

Seizure
Poisoning/Overdose
Hypoglycemia

HALOPERIDOL (HALDOL)

Description

Haloperidol is a dopamine antagonist antipsychotic medication. Haloperidol produces a dopaminergic blockade, a mild alpha-adrenergic blockade, and causes peripheral vasodilation. Its major actions are sedation and tranquilization.

Onset & Duration

- Onset: Within 10 minutes after IM administration. Peak effect within 30 minutes
- Duration: 2-4 hours (may be longer in some individuals)

Indications

- Sedation of a severely agitated combative patient

Contraindications

- Suspected myocardial infarction
- Hypotension
- Respiratory or CNS depression
- Pregnancy
- Children < 8 years old

Precautions

- Haldol may cause hypotension, tachycardia, and prolongation of the QT interval. Use with caution in severe cardiovascular disease.
- Cardiac monitor and establish an IV as soon as possible with all administrations.
- Some patients may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following haloperidol administration.
- Rare instances of neuroleptic malignant syndrome (very high fever, muscular rigidity) have been known to occur after the use of haloperidol.

Dosage and Administration

Adults and Pediatrics > 8 years old
5 - 10 mg IM

BASE CONTACT must be made for additional doses (consider if no effects within 10 minutes)

Special Considerations

- Extra-pyramidal reactions have been noted hours to days after treatment, usually presenting as spasm of the muscles of the tongue, face, neck, and back. This may be treated with diphenhydramine.
- Hypotension and tachycardia secondary to haloperidol are usually self-limiting and should be treated with IV fluid bolus.
- Use reduced dose in patients age ≥ 65

Protocol

Agitated/Combative Patient Protocol

HYDROXYCOBALAMIN (CYANOKIT)

Description

- Cyanide inhibits cytochrome oxidase, thereby arresting cellular respiration and forcing anaerobic metabolism, which leads to lactate production and acidosis. Hydoxycobalamin binds cyanide ions to form cyanocobalamin which is excreted in urine.

Indications

- Adult or pediatric patient with suspected cyanide poisoning from any route, including smoke inhalation in an enclosed space, with any of the following clinical signs:
  - Pulseless arrest
  - Coma/unresponsiveness
  - Signs of shock

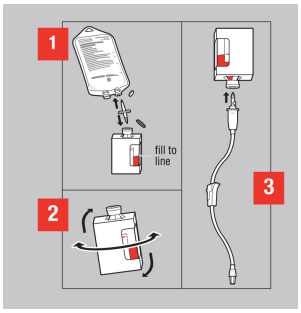
Precautions

- Administer only after basic life support measures have been initiated and always in conjunction with other supportive treatment modalities

Adverse Reactions

- Hypertension
- Allergic reaction/anaphylaxis

Dosage and Administration



- **Adult** dose is 5 gm IV
- **Pediatric** dose is 70mg/kg up to 5 gm IV
  - Cyanokit consists of either a single 5 gm vial or 2 x 250 mL vials each containing 2.5 gm of hydroxycobalamin.
- Single 5 gm vial Instructions:
  1. Reconstitute: Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride Injection* to the vial using the transfer spike. Fill to the line. *0.9% Sodium Chloride Injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's Solution and 5% Dextrose Injection have also been found to be compatible with hydroxocobalamin.
  2. Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
  3. Infuse Vial: Use vented intravenous tubing, hang and infuse desired dose over 15 minutes.
- 2 x 2.5 gm vials instructions:
  1. Reconstitute: Add 100 mL of 0.9% Sodium Chloride Injection* to the vial using the transfer spike. Fill to the line.
  2. Mix: The vials should be repeatedly inverted or rocked, not shaken, for at least 30 seconds prior to infusion.
  3. Infuse 1st vial: Use vented intravenous tubing, hang and infuse desired dose over 7.5 min.
  4. Infuse 2nd vial (repeat steps 1 and 2 before 2nd infusion) to desired dose over 7.5 min.

Special Considerations

- It is understood that Cyanokit may not be available to all agencies at all times and therefore is not considered standard of care. Notify receiving facility if Cyanokit used.

IPRATROPIUM BROMIDE (ATROVENT)

Description

Ipratropium is a anticholinergic antimuscarinic bronchodilator chemically related to atropine.

Onset & Duration

- Onset: 5-15 min. after inhalation
- Duration: 6-8 hr. after inhalation

Indications

- Bronchospasm

Contraindications

- Do not administer to children < 2 years
- Soy or peanut allergy is a contraindication to use of Atrovent metered dose inhaler, not the nebulized solution, which does not have the allergen contained in propellant

Adverse Reactions

- Palpitations
- Tremors
- Dry mouth

How Supplied

Premixed Container: 0.5 mg in 2.5ml NS

Dosage and Administration

Adult
Bronchospasm:

Ipratropium (0.5 mg/2.5 ml) along with albuterol in a nebulizer

Child (2yrs – 12yrs)
Mod and Severe Bronchospasm

Ipratropium (0.5 mg/2.5 ml) along with albuterol in a nebulizer
Not indicated for repetitive dose or continuous neb use

Protocol

- Asthma
- COPD
- Pediatric Respiratory Distress

KETAMINE

Description

Ketamine is a non-competitive NMDA receptor antagonist and dissociative, amnestic, analgesic anesthetic agent.

Onset & Duration

- Onset: 1-5 minutes after IM administration.
- Duration: 10-15 minutes

Indications

- Adult patient with signs of excited delirium where the safety of patient and/or providers is of substantial concern

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Contraindications

- Relatively contraindicated in penetrating eye trauma

Side Effects

- Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress. After every administration of ketamine:
    a. Prepare to provide respiratory support including bag-valve-mask ventilation and suction which are generally sufficient in rare cases of laryngospasm.
    b. Institute cardiac monitoring, pulse oximetry and continuous waveform capnography
    c. Establish IV or IO access, check blood glucose
    d. Establish and maintain physical restraint.
- Emergence reaction: presents as anxiety, agitation, apparent hallucinations or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepine.
- Nausea and Vomiting: always have suction available after ketamine administration. Give antiemetic as needed.
- Hypersalivation: Suction usually sufficient. If profound hypersalivation causing airway difficulty, administer atropine 0.5 mg IV.

Dosage and Administration

Adults:

- 5 mg/kg IM
- Contact base for additional doses

Pediatric:

- Excited delirium is not reported in children and use of ketamine is not expected in pediatric patients

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Special Considerations

- Excited delirium is a medical emergency. Expedite rapid and safe transport.
- Ketamine is provided for IM administration in 100 mg/mL concentration
- All cases of ketamine use will be reviwed by the Medical Director.

Protocol

- Agitated/Combative Patient Protocol
- Psychiatric/Behavioral Protocol
- Restraints
- Benzodiazepine

LIDOCAINE 2% SOLUTION

Description

Local anesthetic for relief of pain during intraosseous fluid administration.

Indications

- Analgesic for intraosseous infusion

Side Effects

- Seizures
- Drowsiness
- Tachycardia
- Bradycardia
- Confusion
- Hypotension

Precautions

- Lidocaine is metabolized in the liver and therefore, elderly patients and those with liver disease or poor liver perfusion secondary to shock or congestive heart failure are more likely to experience side effects

Dosage and Administration

0.5 mg/kg IO bolus, slowly, maximum dose is 50 mg

Protocol

Intraosseous Administration

Special Notes

- Seizure from lidocaine toxicity likely to be brief and self-limited. If prolonged, or status epilepticus, treat per seizure protocol
- Treat dysrhythmias according to specific protocol

MAGNESIUM SULFATE

Description

Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. In cardiac patients, it stabilizes the potassium pump, correcting repolarization. It also shortens the Q-T interval in the presence of ventricular arrhythmias due to drug toxicity or electrolyte imbalance. In respiratory patients, it may act as a bronchodilator in acute bronchospasm due to asthma or other bronchospastic diseases. In patients suffering from eclampsia, it controls seizures by blocking neuromuscular transmission and lowers blood pressure as well as decreases cerebral vasospasm.

Indications

Antiarrhythmic

- Torsade de pointes associated with prolonged QT interval

Respiratory

- Severe bronchospasm unresponsive to continuous albuterol, ipratropium, and IM epinephrine.

Obstetrics

- Eclampsia: Pregnancy > 20 weeks gestational age or post partum with seizures

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Precautions

- Bradycardia
- Hypotension
- Respiratory depression

Adverse Reactions

- Bradycardia
- Hypotension
- Respiratory depression

Dosage and Administration

- **Torsades de Pointes suspected caused by prolonged QT interval:**
  - 2 gm, IV bolus.
- **Refractory Severe Bronchospasm:**
  - 2 gm, IV bolus, over 2 minutes **CONTACT BASE** for order.
- **Eclampsia:**
  - 2 gm, IV bolus slowly
  - Mix 4 gm, diluted in 50 ml of Normal Saline (0.9 NS), IV drip over 15-30 minutes.

Protocol

- Adult Universal Pulseless Arrest Algorithm
- Pediatric Pulseless Arrest
- COPD
- Asthma
- Obstetric Complications

METHYLPREDNISOLONE (SOLU-MEDROL)

Description

Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation and may alter the immune response. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

Indications

- Anaphylaxis
- Severe asthma
- COPD
- Suspected Addisonian crisis (cardiovascular collapse in patient at risk for adrenal insufficiency)

Contraindications

- Evidence of active GI bleed

Adverse Reactions

Most adverse reactions are a result of long-term therapy and include:

- Gastrointestinal bleeding
- Hypertension
- Hyperglycemia

Dosage and Administration

Adult:

125 mg, IV/IO bolus, slowly, over 2 minutes

Pediatric:

2 mg/kg, IV/IO bolus, slowly, over 2 minutes to max dose of 125 mg

Protocol

- Asthma
- Allergy and Anaphylaxis
- Chronic Obstructive Pulmonary Disease
- Adult hypotension/shock
- Adrenal Insufficiency

Special Considerations

- Must be reconstituted and used immediately
- The effect of methylprednisolone is generally delayed for several hours.
- Methylprednisolone is not considered a first line drug. Be sure to attend to the patient's primary treatment priorities (i.e. airway, ventilation, beta-agonist nebulization) first. If primary treatment priorities have been completed and there is time while in route to the hospital, then methylprednisolone can be administered. Do not delay transport to administer this drug

NALOXONE (NARCAN)

Description

Naloxone is a competitive opioid receptor antagonist

Onset & Duration

Onset: Within 5 minutes
Duration: 1-4 hours

Indications

- For reversal of suspected opioid-inducted CNS and respiratory depression
- Coma of unknown origin with impaired airway reflexes or respiratory depression

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Adverse Reactions

- Tachycardia
- Nausea and vomiting
- Pulmonary Edema

Dosage and Administration

Adult:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total
In cases of severe respiratory compromise or arrest, 2 mg bolus IV/IO/IM is appropriate, otherwise drug should be titrated

Pediatrics:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total

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Protocol

- Universal Altered Mental Status Protocol
- Poisoning/Overdose

Special Considerations

- Not intended for use unless respiratory depression or impaired airway reflexes are present. Reversal of suspected mild-moderate opioid toxicity is not indicated in the field as it may greatly complicate treatment and transport as narcotic-dependent patients may experience violent withdrawal symptoms
- Patients receiving naloxone **must** be transported to a hospital

NITROGLYCERINE (NITROSTAT, NITROQUICK, etc)

Description

Short-acting peripheral venodilator decreasing cardiac preload and afterload

Onset & Duration

Onset: 1-3 min.
Duration: 20-30 min.

Indications

- Pain or discomfort due to suspected Acute Coronary Syndrome
- Pulmonary edema due to congestive heart failure

Contraindications

- Suspected right ventricular ST-segment elevation MI (Inferior STEMI pattern plus ST elevation in right sided-precordial leads)
- Hypotension SBP < 100
- Recent use of erectile dysfunction (ED) medication (e.g. Viagra, Cialis)

Adverse Reactions

- Hypotension
- Headache
- Syncope

Dosage and Administration

0.4 mg (1/150 gr) sublingually or spray, every 5 minutes
PRN up to a total of 3 doses for persistent CP.

Nitropaste: system specific protocol

Protocol

- Adult Chest Pain
- CHF/Pulmonary Edema

OPIOIDS (FENTANYL, MORPHINE, HYDROMORPHONE)

Description

Opioid analgesics with desired effects of analgesia, euphoria and sedation as well as undesired effects of respiratory depression and hypotension. A synthetic opioid, fentanyl is 100 times more potent than morphine, and is less likely to cause histamine release.

Indications

- Treatment of hemodynamically stable patients with moderate to severe pain due to traumatic or medical conditions, including cardiac conditions, abdominal pain, back pain, etc.
- Treatment of shivering after therapeutic induced hypothermia (TIH).

Contraindications

- Hypotension, hemodynamic instability or shock
- Respiratory depression

Caution/Comments:

- Opioids should only be given to hemodynamically stable patients and titrated slowly to effect.
- The objective of pain management is not the removal of all pain, but rather, to make the patient's pain tolerable enough to allow for adequate assessment, treatment and transport
- Respiratory depression, including apnea, may occur suddenly and without warning, and is more common in children and the elderly. **Start with ½ traditional dose in the elderly.**
- Coadministration of opioids and benzodiazepines is discouraged and may only be done with direct physician verbal order.
- Chest wall rigidity has been reported with rapid administration of fentanyl

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Dosage and Administration

FENTANYL:

- **Adult doses may be rounded to nearest 25 mcg increment**
- **Initial dose in adults typically 100 mcg**
- **Strongly consider ½ typical dosing in elderly or frail patient**

Adult:

IV/IO route: 1-2 mcg/kg.

- Dose may be repeated and titrated to clinical effect to a maximum cumulative dose of 300 mcg
- Additional dosing requires BASE CONTACT

IN route: 1-2 mcg/kg.

- Dose may be repeated after initial IN dose to a maximum cumulative dose of 300 mcg. IV route is preferred for repeat dosing.
- Additional dosing requires BASE CONTACT

Pediatric (1-12 years):

IV/IO route: 1-2 mcg/kg.

- Dose may be repeated and titrated to clinical effect to a maximum cumulative dose of 300 mcg.
- Additional dosing requires BASE CONTACT

IN route: 1-2 mcg/kg.

- Dose may be repeated after initial IN dose to a maximum cumulative dose of 300 mcg. IV route is preferred for repeat dosing.
- **IN route requires BASE CONTACT and approval for any patient < 5 years old, or any patient < 12 years old with indication other than isolated orthopedic injury or burns**

Pediatric < 1 year: BASE CONTACT

MORPHINE:

Adult:

IV/IO/IM routes: 6 mg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 10 mg.
- Additional cumulative dosing > 12 mg requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

Pediatric (1-12 years):

IV/IO/IM routes: 0.1 mg/kg. Maximum single dose is 6 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 0.2 mg/kg.
- Additional cumulative dosing requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

Pediatric < 1 year: BASE CONTACT

HYDROMORPHONE:

Adult:

IV/IO/IM routes: 0.5 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 1.5 mg.
- Additional cumulative dosing requires BASE CONTACT.

Pediatric 1-12 years and ≥ 10kg:

IV/IO/IM routes: 0.2 mg

- Repeat dosing requires BASE CONTACT.

Pediatric < 1 years or < 10kg:

IV/IO/IM routes: with verbal order only. BASE CONTACT for any administration

NOTE: IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect. IO/IN/IM are acceptable alternatives when IV access is not readily available. Repeat doses of IN Fentanyl can be given if IV access cannot be established. However greater volumes and repeat IN administration are associated with greater drug run off and may therefore be less effective. Continuous pulse oximetry monitoring is mandatory. Frequent evaluation of the patient's vital signs is also indicated. Emergency resuscitation equipment and naloxone must be immediately available.

Protocol

Extremity Injuries
Adult Chest Pain
Therapeutic Induced hypothermia
Abdominal Pain
Amputations
Burns
Bites/Stings
Snake Bites
Face and Neck Trauma
Chest Trauma
Abdominal Trauma
Spinal Trauma

ORAL GLUCOSE (GLUTOSE, INSTA-GLUCOSE)

Description

Glucose is the body's basic fuel and is required for cellular metabolism

Indications

- Known or suspected hypoglycemia and able to take PO

Contraindications

Inability to swallow or protect airway
Unable to take PO meds for another reason

Administration

One full tube 15 g buccal.

Protocol

- Universal Altered Mental Status Protocol
- Hypoglycemia

OXYGEN

Description

Oxygen added to the inspired air increases the amount of oxygen in the blood, and thereby increases the amount delivered to the tissue. Tissue hypoxia causes cell damage and death. Breathing, in most people, is regulated by small changes in the acid-base balance and CO_2 levels. It takes relatively large decreases in oxygen concentration to stimulate respiration.

Indications

- Suspected hypoxemia or respiratory distress from any cause
- Acute chest or abdominal pain
- Hypotension/shock states from any cause
- Trauma
- Suspected carbon monoxide poisoning
- Obstetrical complications, childbirth

Precautions

- If the patient is not breathing adequately, the treatment of choice is assisted ventilation, not just oxygen.
- When pulse oximetry is available, titrate SpO_2 to ≥ 90%. This may take some time.
- Do not withhold oxygen from a COPD patient out of concerns for loss of hypoxic respiratory drive. This is never a concern in the prehospital setting with short transport times

Administration

Flow	LPM Dosage	Indications
Low Flow	1-2 LPM	Minor medical / trauma
Moderate Flow	3-9 LPM	Moderate medical / trauma
High Flow	10-15 LPM	Severe medical / trauma

Special Notes

- Do not use permanently mounted humidifiers. If the patient warrants humidified oxygen, use a single patient use device.
- Adequate oxygenation is assessed clinically and with the SpO_2 while adequate ventilation is assessed with clinically and with $ETCO_2$.

OXYGEN FLOW RATES		
METHOD	FLOW RATE	OXYGEN INSPIRED AIR (approximate)
Room Air		21%
Nasal Cannula	1 LPM 2 LPM 6 LPM	24% 28% 44%
Simple Face Mask	8 - 10 LPM	40-60%
Non-rebreather Mask	10 LPM	90%
Mouth to Mask	10 LPM 15 LPM	80% 50%
Bag/Valve/Mask (BVM)	Room Air 12 LPM	21% 40%
Bag/Valve/Mask with Reservoir	10-15 LPM	90-100%
OXYGEN -powered breathing device	hand-regulated	100%

PHENYLEPHRINE (INTRANASAL)

Description

Used for topical nasal administration, phenylephrine primarily exhibits alpha adrenergic stimulation. This stimulation can produce moderate to marked vasoconstriction and subsequent nasal decongestion.

Indications

- Prior to nasotracheal intubation to induce vasoconstriction of the nasal mucosa
- Nose bleed

Precautions

- Avoid administration into the eyes, which will dilate pupil

Dosage and Administration

- Instill two drops of 1% solution in the nostril prior to attempting nasotracheal intubation
- Administer 2 sprays in affected naris in patient with active nosebleed after having patient blow nose to expel clots.

Protocol

- Nasotracheal intubation
- Epistaxis

RACEMIC EPINEPHRINE

Description

Racemic epinephrine 2.25% is an aqueous solution that delivers 11.25 mg of racemic epinephrine per 0.5mL for use by **oral inhalation only**. Inhalation causes local effects on the upper airway as well as systemic effects from absorption. Vasoconstriction may reduce swelling in the upper airway, and ß effects on bronchial smooth muscle may relieve bronchospasm.

Onset & Duration

- Onset: 1-5 minutes
- Duration: 1-3 hours

Indications

- Bronchospasm in bronchiolitis
- Stridor at rest in croup
- Suspected epiglottitis in adults or children

Side Effects

- Tachycardia
- Palpitations
- Muscle tremors

Dosage and Administration

0.5 ml racemic epinephrine (acceptable dose for all ages) mixed in 2 ml saline, via nebulizer at 6-8 LPM to create a fine mist and administer over 15 minutes.

Protocol

- Pediatric Respiratory Distress

Special Considerations

- Racemic epi is heat and photo-sensitive
- Once removed from the refrigerator, the unopened package is stable at room temperature until the expiration date stated on the package.
- Do not confuse the side effects with respiratory failure or imminent respiratory arrest.

SODIUM BICARBONATE

Description

Sodium bicarbonate is an alkalotic solution, which neutralizes acids found in the body. Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest.

Indications

- Tricyclic overdose with arrhythmias, widened QRS complex, hypotension, seizures
- Suspected hyperkalemic pulseless arrest: consider in patients with renal failure

Contraindications

- Metabolic and respiratory alkalosis
- Hypocalcemia
- Hypokalemia

Adverse Reactions

- Metabolic alkalosis
- Hyperosmolarity may occur, causing cerebral impairment

Drug Interactions

- May precipitate in calcium solutions.
- Alkalization of urine may increase half-lives of certain drugs.
- Vasopressors may be deactivated.

Dosage and Administration

Adults and children (>10 kg), 8.4%

Tricyclic OD with hypotension or prolonged QRS > 0.10 sec or suspected hyperkalemia-related pulseless arrest:

1.0 mEq/kg slow IV push

Repeat if needed in 10 minutes.

Protocol

- Adult Universal Pulseless Arrest Algorithm
- Poisoning/Overdose

Special Considerations

- Sodium bicarbonate administration increases CO_2 which rapidly enters cells, causing a paradoxical intracellular acidosis.
- Sodium bicarb is no longer recommended for routine use in prolonged cardiac arrest. Its use in pulseless arrest should be limited to known or suspected hyperkalemia (e.g. dialysis patient).

TOPICAL OPHTHALMIC ANESTHETICS

Description

Used for topical administration as a pain reliever for eye irritation. Only proparacaine and tetracaine are approved for use.

Indications

- Pain secondary to eye injuries and corneal abrasions
- Niphablepsia (snow blindness)
- Topical anesthetic to facilitate eye irrigation

Contraindications

- Known allergy to local anesthetics
- Globe lacerations or rupture

Precautions

- Transient burning/stinging when initially applied

Dosage and Administration

Instill two drops into affected eye.
Repeat only with Base Contact and physician consult

Protocol

- May be used for the above listed indications as needed

Special Considerations

- This is single patient use. Unused portions are to be discarded and only new bottles are to be used.
- Do not administer until patient consents to transport and transport has begun
- Topical ophthalmic anesthetics should never be given to a patient for self-administration

8010 Quick Reference for Procedures and Medications Allowed by Protocol

If the item listed is "standing order" for Paramedic but "base contact" for a lower level provider, the item may be performed/administered under the direction of the Paramedic. In these instances, any level EMS provider may attend but the highest level provider maintains responsibility for the care provided. It is assumed that not all agencies will necessarily stock all medications.

S	Standing order	B	Physician order	P	Administered/performed under direct supervision of Paramedic

Airway Procedures	B	BIV	AEMT	I	P
Capnography	S	S	S	S	S
King airway	S	S	S	S	S
Continuous positive airway pressure (CPAP)	S	S	S	S	S
Orotracheal intubation				S	S
Nasotracheal intubation					S
Percutaneous cricothyrotomy					S
Needle thoracostomy for tension pneumothorax decompression				S	S

Cardiovascular Procedures	B	BIV	AEMT	I	P
Tourniquet	S	S	S	S	S
ECG - Acquired (including 12-lead)	S	S	S	S	S
ECG - Interpretation (including 12-lead)				S	S
Blood glucose monitoring	S	S	S	S	S
IV – Peripheral		S	S	S	S
IV – External jugular				S	S
IO					
• All indications				S	S
• Pulseless arrest and extremis		P	P	S	S
Use of established central line (including PICC) for fluid and medication administration				S	S
Automated / Semi-automated external defibrillator (AED)	S	S	S	S	S
Defibrillation – Manual				S	S
Valsalva maneuver					S
Synchronized cardioversion					S
Transcutaneous cardiac pacing				S	S
Therapeutic induced hypothermia (TIH) after cardiac arrest				S	S

Medications	B	BIV	AEMT	I	P
Specialized prescription medications to address an acute crisis given the route of administration is within the scope of the provider	B	B	B	B	B
Adenosine (Adenocard)					
• Adult				B	S
• Pediatric				B	S
Albuterol sulfate					
• MDI, patient assisted	B	B	B	B	S
• MDI, agency supplied		B	B	B	S
• Nebulizer, agency supplied			B	B	S
Amiodarone					
• Pulseless arrest		P	P	B	S
• Tachyarrhythmia with poor perfusion					B
Antiemetic					
• Ondansetron (Zofran) ODT	B	B	B	B	S
• Ondansetron (Zofran) IV				B	S
• Promethazine (Phenergan)				B	S
• Metoclopramide (Reglan)				B	B
• Droperidol - Adult				B	S
Aspirin	S	S	S	S	S
Atropine sulfate					
• Bradyarrhythmia				B	S
• Organophospate poisoning and stable bradycardia				B	B
• Hypersalivation post ketamine administration					S

Medications	B	BIV	AEMT	I	P
Benzodiazepines (midazolam, diazepam, lorazepam)					
• Seizure				B	S
• Sedation for transcutaneous pacing or cardioversion				B	B
• Sedation for severely agitated or combative patient - Adult				B	S
• Sedation for severely agitated or combative patient – Pediatric				B	B
Calcium gluconate					B
• Pulseless arrest assumed due to hyperkalemia					S
• Calcium channel blocker overdose					B
Dextrose 50%		S	S	S	S
Diphenhydramine (Benadryl)				B	S
Dopamine					B
Droperidol					
• Adult				B	S
• Pediatric				B	B
Epinephrine					
• Pulseless arrest – IV		P	P	S	S
• Bradycardia/hypotension refractory to other interventions – IV drip					B
• Systemic allergic reaction – IM	B	B	B	B	S
• Severe allergic reaction – IV drip					B
• Epinephrine Auto-injector	S	S	S	S	S
Furosemide (Lasix)				B	S
Glucagon				S	S
• Hypoglycemia				S	S
• Calcium channel blocker and β-blocker overdose				B	S
Hydroxycobalamin (Cyanokit)				S	S
Ipratropium Bromide (Atrovent)					
• MDI (including combined with albuterol), patient assisted	B	B	B	B	S
• MDI (including combined with albuterol), agency supplied			B	B	S
• Nebulizer (including combined with albuterol), agency supplied			B	B	S
Ketamine – Excited delirium					S
Lidocaine 2% Solution – Anesthetic for IO needle insertion				S	S
Magnesium sulfate					
• Torsades de Pointes/V-fib & pulseless V-tach refractory to amiodarone					S
• Refractory severe bronchospasm					B
• Eclampsia					S
Methyprednisolone (Solu-Medrol)				B	B
Naloxone (Narcan)		S	S	S	S
Nitroglycerin (Nitrostat, Nitroquick)					
• Sublingual, patient assisted	B	B	S	S	S
• Sublingual, agency supplied			S	S	S
• Nitroglycerin paste			B	B	S
Opiods				B	S
• Adult				B	S
• Pediatric (1-12 years)				B	S
• Pediatric (<1 year)				B	B
Oral glucose (Glutose, Insta-glucose)	S	S	S	S	S
Oxygen	S	S	S	S	S
Over-the-counter medications (acetaminophen, ibuprofen, etc)	S	S	S	S	S
Phenylephrine (Intranasal)					
• Epistaxis	S	S	S	S	S
• Prior to nasotracheal intubation					S
Racemic epinephrine (Vaponepherine)				B	S
Sodium bicarbonate					S
• Pulseless arrest				B	S
• Tricyclic antidepressant overdose				B	S
Topical hemostatic agents	S	S	S	S	S
Topical ophthalmic anesthetics				S	S

UNUSUAL CIRCUMSTANCE & EMERGENCY ROOM/FIELD INCIDENT REPORTS

Purpose

The purpose of this protocol is to provide a guideline for prehospital providers and field instructors to:

A. Inform the Medical Director or his/her staff about an unusual incident.
B. Initiate an inquiry into an event or incident.
C. Report patient encounters to the Medical Director in which base station contact could not be made as required by protocol.
D. Any concern relating to the quality of care of a patient in the St. Anthony system.
E. Any additional documentation required regarding Medical Director waivers that are in effect for the EMS agency.

The Unusual Circumstance & Emergency Room/Field Agency Incident Report is intended to provide a uniform reporting form for the St. Anthony system. It should be used for both positive reporting of commendable conduct as well as problems or difficult encounters because all of these are considered important for quality improvement of the EMS system. Documentation of an unusual circumstance does not equate to a complaint or necessarily reflect a negative criticism of an event (the implications and result of a report are to be determined by the Medical Director). It serves as a means to resolve issues, identify areas for system improvement and commendation, and avoid the ineffectiveness of verbal complaints, statements and compliments.

Procedure

A. The following are instances when an unusual circumstance report is required to be submitted to the Medical Director or his / her designee:
    - When the prehospital provider has a patient encounter in which base station contact could not be made as required by protocol. In such cases, the run report must accompany the report.
    - In the event a cricothyrotomy is performed a UCR must be submitted, with the run report, to the office of the Medical Director within 48 hours of patient encounter. The Paramedic who performed or attempted to perform the procedure is responsible for completion of the UCR form and reporting.

B. The UCR should not be submitted with the copy of the run report that is left with the Emergency Department when a patient is transported.

C. The UCR may be submitted to the Medical Director or EMS Coordinator via email or at the following address:

St. Anthony Summit Medical Center

PreHospital Services

PO Box 738

Frisco, Colorado 80443

D. The sample form/format appended to this protocol is available for use. This can be substituted with any written or electronic correspondence that includes all of the information contained in section E, noted below.

E. It is important that any UCR include the following:
1. A copy of the pertinent run report/PCR must be attached to the UCR.
2. Reporting person's name, agency, and telephone number(s).
3. Identification of the data, time, location, and agency/agencies and personnel involved.
4. The receiving facility, if the patient was transported.
5. In cases of deviation from protocol, such as an emergency when base station contact could not be established, an explanation of the events which prevented base station contact.
6. The reporting person's source of information (personal observation or from person who has first hand knowledge.)

F. All UCRs will be reviewed, and where appropriate, the author of the report will be provided feedback from the Medical Director, EMS Coordinator, or the PreHospital staff.

G. Examples of the types of incidents or events that should be documented on an UCR include the following:
- Physician/other intervener calls in which patient care may have been effected
- Complimentary reports of agencies or personnel
- Anytime base station communication is not possible regardless of the emergent nature of the call, or radio or geographical problems
- Medication or procedure errors or complications
- Difficulties encountered with hospital staff of a transferring or receiving facility.